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NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

THIRTY-SECOND YEARBOOK

The Teaching of Geography

PUBLIC SCHOOL PUBLISHING COMPANY
BLOOMINGTON, ILLINOIS

1933

THE THIRTY-SECOND YEARBOOK

OF THE
NATIONAL SOCIETY FOR THE STUDY
OF EDUCATION

THE TEACHING OF GEOGRAPHY

*Prepared by the Society's Committee on
the Teaching of Geography*

Robert M. Brown, Earle E. Lackey, Edith Parker, Douglas Ridgley,
DeForest Stull, Zoe Thralls, and A. E. Parkins (Chairman)

Assisted by Numerous Active Members of the Society

ERRATA: On flyleaf and page iv:
In names of the Committee on Geography,
Add W. C. Bagley and change Earle E.
Lackey to read Earl E. Lackey.

GUY MONTROSE WHITTE

THIS YEARBOOK WILL BE DISCUSSED AT THE MINNEAPOLIS MEETING OF THE
NATIONAL SOCIETY, SATURDAY, FEBRUARY 25, AND TUESDAY
FEBRUARY 28, 1933, 8:00 P.M.

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EDITOR'S PREFACE

The proposal that the Society produce a yearbook on geography was first made in a letter sent the Secretary by Miss Flora Nettleman, of Toledo, in November, 1924, who felt that a properly organized committee might do for that subject what the Twenty-Fourth Yearbook had done for reading. When this proposal was put before the Board of Directors at the Cincinnati meeting the following February, it was deemed wise to see to what extent other members of the Society exhibited interest in the suggestion. The response to our oral and later printed solicitation for a show of interest was, however, disappointing; consequently the Board decided at its Chicago meeting in October, 1925, to lay the matter on the table—a decision that some of the Directors were further persuaded to take by their convictions that it would be more difficult in a content subject than in a habit-building subject to assemble useful materials and that the situation was complicated by the seemingly strong tendency to transfer geography to other branches of curricular activity.

Here, "on the table," then, the geography-yearbook proposal slumbered for nearly four years, until at the Chicago meeting of the Board of Directors, in May, 1929, Director Horn called attention to the importance of geography in European schools and suggested that the publication of a yearbook on this subject might serve a useful purpose in strengthening the work in it in American schools. Other members of the Board concurred in this, but felt that the outlook for success would be rosier if the geographers would be willing to join the Society in the preparation of such a yearbook. Director Bagley was asked to confer with various persons and to report upon the possibilities of a volume dealing with the place of geography in the educational program.

At the Atlantic City meeting of the Board, in February, 1930, Director Bagley reported the receipt from Professor George J. Miller, of Mankato, Minnesota, of a resolution passed at a meeting of the National Council of Geography Teachers that in substance asked the Board of Directors of this Society to devote a yearbook to geography, preferably in 1933, pledged the cordial support of the Council, and proposed the appointment of a committee from the Council to formulate for the consideration of the Board suggestions for such a yearbook. The Board was gratified by this action of the Council and requested Director Bagley to arrange an early conference at New York City between certain representatives of the Council and the Secretary-Treasurer and himself as representatives of the Board, with the hope

that a mutually satisfactory committee and program might be devised for the endorsement of the Board at its May meeting.

This conference was arranged, was attended by a considerable group of members of the National Council of Geography Teachers, and led to enthusiastic endorsement of the undertaking by all the representatives present. Shortly afterward, at the Buffalo meeting of the Board of Directors, in May, 1930, the undertaking was formally endorsed and, on the recommendation of Director Bagley, there were appointed as the Society's Yearbook Committee on the Teaching of Geography the following persons: Professor A. E. Parkins (chairman), Professors R. M. Brown, E. E. Lackey, Edith Parker, Douglas Ridgley, and DeForest Stull. To this group of persons primarily interested in the teaching of geography the Board added Professor Bagley as its representative on the Committee and sought, unfortunately in vain, to induce Dr. Isaiah Bowman to represent on the Committee the aspects of geographic activity with which he is conspicuously identified. In March, 1931, the Board approved the nomination by Chairman Parkins, of Professor Zoe Thralls as the eighth member of the Yearbook Committee.

As Chairman Parkins has explained in his Introduction to the Yearbook and as is clear from footnotes accompanying various chapters, the "cordial support of the Council" has been no mere polite gesture; on the contrary, the Yearbook Committee has devoted much of its time and energy to organizing and directing the labors of several active subcommittees of geography teachers, and through its affiliation with the Council, it has succeeded to a degree undoubtedly never before attained in the preparation of any of the Society's yearbooks in enlisting the support and the sympathy of a large number of persons who have a common professional aim. Many of the problems that occupy the pages of this book have been actively discussed at sessions of the teachers of geography during the period of preparation of the book. Not that every member of the National Council of Geography Teachers agrees with every statement in this volume; that would be absurd to expect—in fact, the members of the Yearbook Committee, itself, have frankly stated their disagreement on certain matters; but, speaking generally, I believe it safe to assert that seldom, if ever, has the Society produced a yearbook that represents so nearly a *consensus gentium*—the *gentes* here being that large group of individuals professionally concerned with the place of geography in the program of education. If my assertion is a safe one, it is inescapable that this Yearbook will exert a powerful influence upon the trends of curriculum-making.

I should like to take a few lines to call the attention of members of the Society to an indirect effect of the Society's yearbook program that, in the conviction of the Board of Directors, operates to the decided advantage of education in the United States: I refer to the 'reflex effect,' if the phrase is pertinent, of the process of preparing a yearbook like this upon the personnel of the yearbook committee. This outcome has been commented upon by members of several yearbook committees. Despite the public meetings of numerous professional associations, it remains true that teachers, as a class, comparatively seldom see their colleagues in action, and certainly only rarely have the opportunity of sitting down together for a prolonged exchange of views and airing of differences of opinion on controversial issues. I suspect that Professor Rugg may not have been jesting when he declared that he locked his Curriculum Committee in a hotel room, put the key in his pocket, and told them they could not get out until they had written down every principle on which they agreed and signed their names to the statement. At any rate, that statement and those signatures are on record in Part II of the Twenty-Sixth Yearbook.

In the case of the Geography Committee the holding of some *sixty-five* half-day or evening sessions, including two meetings of a week or more each, proved an effective method for resolving seeming differences of opinion and of unifying the thinking of the participants.

One other aspect of our work I should like to bring to the attention of our members in behalf of the Board of Directors and of the Yearbook Committee. Despite all that has just been said concerning the efforts of the two coöperating organizations to make the yearbook comprehensively representative of every interest while favoring no single interest, there may remain rooted in the minds of a few individuals the notion that somehow the cards have been 'stacked' in favor of or against some 'movement' or 'trend' or 'ism,' or in favor of or against some textbook or some publisher or some map-maker or other commercial interest. Let any individual, if there be one, who entertains that notion erase it completely from his mind. The Board of Directors, ever since it was established in 1924 to secure a more businesslike and responsible conduct of the Society's affairs, has consistently and persistently tried to utilize every possible method to secure thoroughly representative committees, reviewers, and program speakers. In the present instance the Yearbook Committee on Geography, while encouraging free discussion of geographic education at its Council meetings, has sedulously guarded against bias for or against any textbook and has taken pains to be certain that its significant conclusions should not become known in advance to any person outside its membership.

G. M. WHIPPLE

INTRODUCTION

Two significant proposals were made to the Yearbook Committee on the Teaching of Geography at the time of its organization, by representatives of the National Society for the Study of Education. They were, first that we prepare a Yearbook on the teaching of geography in the elementary school, the junior and senior high school, the junior college, and the teacher training institution; and second, that in so doing we keep in mind the probable reading public—both the teachers of geography, themselves, and the superintendents, principals, and supervisors of the elementary and high schools, all of whom were interested in improvements in teaching and in curriculum construction. We have endeavored in the preparation of the 1933 Yearbook to hold to the scope and purpose set for us. Throughout our work the emphasis has been on the public school phases of geography: the teaching of geography in the public school, the curriculum for the public schools, the preparation of teachers for the public schools, and research in educational geography relating to the public schools.

The Yearbook is, for the most part, the product of teachers of geography in service in the classrooms of the public schools and teacher-training institutions. The task of the Committee has been, all along, largely supervisory. While individual members of the Committee have papers or reports in the Yearbook, our major task, as we saw it, was to secure the services of as many active teachers of geography as possible, who had contributions to make that would advance the teaching of geography. In selecting these collaborators we tried not to deal with individuals but with what individuals had to offer that would be of value to the readers of the Yearbook. We were guided in our selection of workers by their known interests as revealed by previous papers and published articles and by offerings made us when, in the summer of 1930, we first sent out our request for titles of possible papers. Every section of our country has made contributions. We believe confidently that the report embodies current thought and practice of the vast majority of teachers of our elementary and secondary schools and teacher-training institutions.

As the table of contents shows, the Yearbook is divided into six sections. Section I is devoted to a brief characterization of some of

the textbooks used in our schools during the century just closed and to the contributions of geography in modern life, as viewed by specialists. Section II sets forth the development of a science of teaching geography. Sections III and IV discuss the place of geography in the curriculum and the curriculum in geography. Here most of the material has been assembled and organized by subcommittees so selected regionally that they might have frequent conferences. Section V then takes up the techniques and equipment needed for carrying out the curricula; *i.e.*, it deals with methods, tests and measurements, teacher-training, and the source and handling of geographic materials used in teaching of geography. Finally, in Section VI have been gathered reports and analyses of investigations in the teaching of geography. Herein is included a survey and analysis (carried out by Miss Zink and reviewed by a select subcommittee) of more than eighty theses and reports of investigations in educational geography. In addition, Section VI contains reports of numerous minor investigations and statistical studies undertaken for the Yearbook. Many of these studies have furnished data that have been utilized by the regional committees and other workers.

The Committee, in its organization of the material here presented, has assumed that geography has a place in the curricula of our schools. (We are not, in the Yearbook, primarily concerned with the teaching of geography in colleges, as already stated.) We offer no apologies for this assumption. We make no specific attempt to justify the existence of geography. A subject that has held such a prominent place in the schools (and also in the great historic colleges and universities of America and Europe) for more than 2,000 years—with some lapses it is true; that has had during the past two or three decades such unprecedented growth in our higher institutions in number of faculty representatives and student enrollment; that is alive to every development of teaching technique; that deals so intimately and practically with the activities and happenings of the everyday world; that lays the foundations for constructive thinking on many of the problems confronting us to-day; such a subject needs no effort on our part to justify its place in the curricula of our public schools. We are content to leave to the thoughtful curriculum-makers the future of our subject. All we insist is that they view us as we are to-day, not as we were thirty or forty years ago when they, as children in the grades, bounded the states, learned the capitals and their location, memorized long,

meaningless lists of products, and considered their geographic education complete. After all, we really have developed.

The members of the Committee, and I am sure most of the others who have participated in the preparation of the 1933 Yearbook, have that breadth of view that checks any attempt to overemphasize geography in our educational scheme. We do not assume that geography, though it teaches much about man's economic, social, and political life, is a panacea for all the ills and supposed ills of our time, whether it be taught by itself or fused with other subjects whose field is man and his living. We are content to leave a portion of the responsibility for child-training to other well-tried agencies.

We do believe in subjects; we believe in them as representing a scheme of organization of human knowledge that is the product of centuries of human effort and that has stood the test of time. The subject scheme of organization is the result of a normal evolution of arrangement of facts, principles, laws, and experiences as frontier thinkers and explorers made their discoveries. We may well consider it the natural scheme of organization because of the universality of its use among civilized people and its evolution without the assistance of organized propagandists. It is conceivable that there are other ways of organizing human knowledge than the ones now in vogue in science, but why abandon a system that has evolved naturally and that has for hundreds of years been found to work. We believe that improvement in the teaching of geography, or any other of the well-recognized subjects or fields, is to be had not by revolution but by evolution, not by a wholly new scheme or alignment of facts and experiences but by the more widespread application and practice of the present-day, progressive teaching techniques applied to the superabundance of material already organized in the well-tried and well-known fields. We believe that progressiveness is best exhibited by improvement of the teaching of what we have than by the iconoclastic destruction of subject structures that are familiar to all.

The Yearbook is not intended to be a handy and ready reference for the teacher seeking devices and short-cut methods. We have no desire to discourage, or replace the need of sound educational scholarship in the classroom. We believe it our task to suggest such materials and samples of materials in classroom procedure that the intelligent teacher may be able to evaluate both her own methods and those of

others, to devise new methods, and to distinguish the practical from the impractical, even though the latter be attractively advertised.

Owing to the limited time available for the preparation of the manuscript, it was impossible for the curriculum committees to present curricula based entirely on extensive experimentation; but there has been much investigating, much experimenting, much testing. Moreover, the members of the committees or conferences have all had practical experience in the classroom, and they have carried to their task a thorough knowledge of other curricula at the particular levels of which they were writing and a thorough knowledge of the principles of learning, as well as a knowledge of the fundamentals of geography.

The several group conferences, working on the curricula for the elementary and junior and senior high schools, have operated as units, so that there might be the greatest possible coördination and integration of teaching units at the several stages, steps, or levels. They have planned to make the learning of geography or the 'experiencing of geography' in the elementary and secondary schools a continuous process. What is offered in these curricular programs is to be considered one series of possible programs affording a minimum of overlap, not necessarily the only programs that might work satisfactorily.

We are not suggesting radical departures from well-tried procedures in the curricula or elsewhere. There has been no attempt to set geography right, for we cannot see that where handled by well-trained, experienced teachers it has been taught wrongly. We feel that what is most needed is more and better trained geography teachers.

We believe in the activity program but not the extreme activity program in which interest completely eliminates deliberate, conscious effort. We recognize the value of interest-stimulating activities, but we believe that work, which is practical discipline, is essential in learning procedure if the learner is to be trained for active participation in the working world. There is no royal road to geography, except through work.

The curricula presented in the Yearbook do not knowingly propagandize any particular course of study or any one geography series or text. We have taken great pains to head off possible implications that may be made on that score. We have no desire to 'put over' any one procedure, practice, or philosophy. In fact the curricula are not the Committee's curricula. We felt justified in leaving each curriculum subcommittee free to develop and express its own opinions or philosophy

as to the nature and content of geography and to develop its curriculum as it saw fit. We have reviewed and discussed carefully, at great length, the curricula offered us and have suggested changes, which suggestions have been received in excellent spirit and, in most cases, accepted or compromises arranged. Exceptions taken by some members of the Yearbook Committee are indicated in the text. All the papers in the Yearbook and reports of special committees and conferences that we thought possibly might contain controversial material have been presented on the open floor of the meetings of the National Council of Geography Teachers at two of its meetings, the Clark University meeting and the Ypsilanti meeting. These meetings have been well attended, and the papers have engendered much discussion. The Steering Committee, as well as the co-workers on the Yearbook, have profited by these open discussions. We all have tried to be extremely sympathetic to suggestions offered.

In the launching of the project, the organizing of the contents of the volume, and the critical studying and revising of the Yearbook on the Teaching of Geography, the Society's Committee held six meetings as follows: two half-day sessions and one evening session at Columbus, Ohio, at the meeting of the National Education Association; two half-day sessions and one evening session at Teachers College, Columbia University, New York; twenty-four half-day and eight evening sessions at West Barrington, Rhode Island; one half-day and one evening session at the meeting of the National Council of Geography Teachers in Worcester, Massachusetts; three half-day sessions at the Ypsilanti, Michigan, meeting of the National Council of Geography Teachers; and finally, fifteen half-day and seven evening sessions at Pittsburgh, Pennsylvania. The time devoted by our co-laborers to the preparation of papers and investigations, taken as a whole, would amount to several times that given by the Committee.

For the Committee,

A. E. PARKINS, *Chairman.*

SECTION I
THE DEVELOPMENT OF GEOGRAPHY AND ITS
GENERAL CONTRIBUTION TO LIFE

GUIDE TO SECTION I

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CHAPTER I

NINETEENTH CENTURY TEXTBOOKS OF GEOGRAPHY

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and

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I. INTRODUCTION

Elementary-school texts in the nineteenth century underwent a natural development in accord with the spirit of the time and with the beginnings of the emphasis of methods of study and teaching following the inauguration of normal schools.

The early books were encyclopedic and were meant to be memorized—just as textbooks unfortunately are in many places today. Much of the content was simple, some of it bizarre, and the fundamental assumptions as to child nature were often amusing. Witness, for instance, the following introductory paragraphs from the first lesson in a little textbook of 1794:

Master—Presuming, my dear children, that you have an inclination to obtain a knowledge of the entertaining and useful science of geography, I shall devote a few hours to the pleasant task of instructing you in some of the most useful and entertaining branches of this science. I flatter myself with the hope that it will excite in you such a taste and desire for the study of it, as will lead you, as your years and opportunities allow, to make yourself a thorough master of it.

Pupil—I hope, Sir, I have a due sense of your goodness and shall very cheerfully and, I trust, profitably attend your instructions.

At the close of the section on physical geography, seemingly one lesson that covers a third of the book, the Master quotes from “the pious Psalmist” and the pupil is called on to say: “I shall never forget what you have been telling me. I feel very thankful, Sir, for your

entertaining instructions and long to have tomorrow come that I may hear more of them." How times have changed!

The books of these early years were ambitiously inclusive and frequently were called 'grammars.' But it should be remembered that the word *grammar* then was applied—the usage now is almost obsolete—to a book presenting in methodical form the fundamental rules or principles of an art or a science. The grammar of geography of a hundred years ago covered in general the field that would now be grouped under the word *elements*.

The books were descriptive, rather than explanatory, and causal relations were never even suggested. Gradually the demand arose for a new type of text that would be more instructing, in the better sense. It was not, however, until the days of Guyot, 1867, and Maury, 1868-1870, that school geography in the modern sense began to function in schools. Guyot believed in encouraging children to think. His books, like those of Maury, stressed physical geography, and these two authors gave point of view and courage to a host of competitors.

The next stage in development came in 1895 and 1897, following the famous report of the Committee of Ten, with the appearance of *Frye's Geographies*, and later, the *Natural Series* by Redway and Hinman. Both series emphasized the then modern phases of physiography—each in its own way—and both helped in creating what was almost a revolution in school geography teaching.

The latest contribution of the century to exert a marked influence on school geography teaching was the series of Tarr and McMurry, in 1900. These books were organized from the pedagogical rather than the logical standpoint, in accordance with the conceptions of the time as to the best methods of teaching children.

Later, but not in the period included in this study, came many more series, each from a different point of view, until today a school superintendent has at his call more than thirty series of texts, many of them carrying the honored names of half a century ago.

Such in brief is the skeleton of the history of elementary-school geography for the century just passed. The following pages are devoted to a presentation of interesting phases of the leading texts of the different periods. The books considered are merely those that were most common, and hence the list is in nowise complete.

II. TEXTBOOKS BEFORE EIGHTEEN HUNDRED

Thomas Hutchins, 1730-1789, was traveler, surveyor, and describer of much of our colonial West and South. Long in the British Office in London, he suffered much for his loyalty to America. Released from prison, he served Franklin in Paris, became geographer of our southern army in 1781, and soon Geographer to the United States. Of him his biographer, F. C. Hicks, says, "His geographical works formed the basis for the famous American Geography of Jedidiah Morse."

From 1784 for fourscore years, American geographies for school and family gave distinction to Jedidiah Morse, Congregational clergyman, and to Sidney Morse, his son. Morse published his *Geography Made Easy* in 1784. The stream of texts and of geographic enthusiasms that has now been flowing for almost 150 years might well soften, a little, our present pride of achievement. We have not yet reached the ocean.

Our Geography began with travel and exploration in the flush of subduing a new continent. In the preface to *Geography Made Easy*, written in New Haven, October 28, 1784, we read that men wish to know the world but "the geographical books are too expensive." Hence comes this 16-mo book, 214 pages, and the only approach to a map is a page with the names of the countries of a continent printed in their relative positions. The definition of geography calls mainly for location, but the author betters this with much description. "The top of a map is always north." The author despises Baptists, has a good eye for feminine beauty and thinks maple sugar "very palatable."

Not much was known of the West, for all the great mountains were toward the Pole, and in the long "Alegany." The Mohawk navigation is well described, that great artery of traffic which Washington went to see one year before in 1783. Morse liked New York better than he liked its folks, who were "more luxurious and dissipated in their morals and manners than in the New England states." So we see how easily Morse wanders from locational geography. Newark was a "pretty town, remarkable for its good cider"; Pennsylvania had been the most "virtuous, peaceful and happy colony" in history, but newcomers had corrupted it with "luxury and commercialism."

Morse roundly condemns slavery, but his story of foreigners would not promote happy international relations. Spaniards were "lazy, proud, cunning, and revengeful"; Flanders people were "heavy, blunt,

and honest," but had "indelicate manners"; Swedes were "grave, self-opinioned, and distrustful." Surely geography was needed in 1784, for it was "not necessary" to describe Norway because so little known. "The miserable inhabitants have neither cornfields nor vineyards" and are obliged to hunt and fish. Dr. Morse's essential soundness is always, however, coming out, as when he refers to the Revolution as "the late unnatural and destructive war."

Most of the old texts are very religious. Asia is the "principal quarter of the globe," for there was the Garden of Eden, the nursery of the race after the Flood, the birth of Christ, and the spread of the Gospel.

A much larger work is Morse's *American Geography*. The prefaces to the first and second editions were dated at Charlestown, Massachusetts, 1789 and 1793, while the third is dated at Piccadilly, 1794. This volume has 714 large pages. In the second preface Morse very well observes that the science of geography is not stationary, that it is not easy for the geographer to keep pace with changes, that what is geographic truth in one year may become error in the next. He begins as usual with the earth as a globe, passes to climate and the forms of land and water, then to the discovery, general description, and settlement of the continent. Throughout, much history is included. There are twenty-five full-page maps in black and white, some folded maps and a copy of the famous Filson map of Kentucky. To the United States 440 pages are given.

In the general account of the United States is something amusing to us but serious in its time—a list of more than 100 "Medicinal Plants in New England." Animal life gets thirty pages, not omitting what to do if bitten by a rattlesnake. The character of Americans is not a new theme, for here we have it. Europe was charging us with being poor in poets, mathematicians, and geniuses, and Jefferson was throwing back the challenge, saying—give us time to produce a Homer, Virgil, or Shakespeare.

The volume certainly was badly out of balance, for Europe gets 33 pages, with 18 for Asia, and 11 for Africa. The work closes with the cheerful information that of the world's population, one died in every second of time.

These books went through many editions. The twenty-second edition of *Geography Made Easy* appeared in Boston in 1820. Copies

from several issues of this text are now kept in the rare book room of the Library of Congress. The twentieth edition was published by William Williams of Utica in 1819 and still used the preface of 1789.

III. TEXTS OF THE FIRST QUARTER OF THE NINETEENTH CENTURY

The Morse texts for many years largely held the field in schools and colleges. Sidney Morse came in in 1820 and his father died in 1826. From 1820 to 1828 there were five issues of the *Morse School Geography*, of ten to twenty thousand each. The *Elements of Geography* was made to precede the earlier small text, and appeared one year before the child geography of Emma Willard.

Dr. Morse yields to no one of the present time in the depth and richness of his philosophy of geography. No other science, he says, is so well adapted for correct impressions on the youthful mind as geography, "combined as it naturally and necessarily is, both with astronomy and history." Or, again—from the preface of 1789—"To discharge the duties of public office with honor and applause, the history, policy, commerce, productions, particular advantages, and interests of the several states ought to be thoroughly understood . . . There is no science better adapted to the capacities of youth and more apt to captivate their attention than geography." Verily for any of us of the twentieth century to boast of our originality is likely to be a confession of our ignorance.

Nathaniel Dwight is the author of *A Short but Comprehensive System of the Geography of the World, by way of Questions and Answers; principally designed for children and common schools*. The preface is dated Hartford, 1795, and the edition seen by the writer was of Northampton, 1807. Geography was in neglect because books were costly. This volume, with no maps and full of catechism, was expected to make the subject simple. We do not quite see how. The book reflects the knowledge of the period—Spitzbergen was an extension of Greenland and the Norwegian Maelstrom was still devouring whales and ships.

There is little proportion; St. Helena, before Napoleon, gets one-fourth of a page, while New York City gets four lines for its situation and commerce and six lines in the enumeration of its churches. The author makes geography "teach us that mankind are one great family" and "promotes social intercourse and mutual happiness." The author

yields to the time, however, and is a little free in describing the frailties of English nobility, and summing up the Welsh as "jealous," the Irish as "vehement," the French "gay and polite," and the German "grave, able, and fond of parade," while the Turk gets full measure, "indolent, superstitious, morose, treacherous, passionate, and unfriendly." So, after all, our modern textbooks may not be original, but they are better vehicles of world friendship. The New England people were "the most intelligent in the world," but the "New Jersey people discover very little taste for learning." Perhaps it was not planned to sell this book in New Jersey!

Referring to the western half of our continent, it appears that "If any commercial advantages were expected from a discovery of these places, it is probable that the enterprising spirit of Europeans or Americans would find means to penetrate them." This was taught in Washington's presidency. Surely America was young, and only Washington and a few men of rare vision saw beyond the Mississippi River.

Several other texts followed in the first quarter of the century. *Elements of Geography for the Use of Schools*, Joseph Scott, author, was published in Philadelphia in 1807. It is a small 12-mo. and starts with 49 pages of difficult globe and astronomical matter.

In 1811 appeared *An Easy Grammar of Geography* by Rev. J. Goldsmith. This was published in London and was the thirty-first edition. It is the model on which early American books seem to have been based. This work in "A New Edition improved by a citizen of Philadelphia" was published in that city in 1818. Each state and territory was separately described and the apparatus of teaching included twenty-five pages of questions on globes, thirty-two pages of other questions, and a vocabulary of names with pronunciation and general location.

Benjamin Workman's *Elements of Geography* was seen by the writer in its fourteenth edition, published in Philadelphia in 1811. Although intended for "young students," it does not attempt to adapt style or treatment to juvenile capacity. The child could revel in such problems as locating the Perioeci in reference to London or finding the countries in which an eclipse of the moon would be visible.

"Curiosities" had place in this, as in many geographies of the time. Such were falls, caves, springs, Oil Creek, Shining Mountains, sugar tree (maple), and big bones. There is some surprising information. "Ireland is an island." "Europe was chiefly peopled by the

descendants of Japheth." "The Flood took place in the 1656th year of the world."

A follower of Goldsmith is Jacob Willets, who published *An Easy Grammar of Geography* on the Goldsmith plan, in Poughkeepsie, in 1819. He approves of the review exercises, puts astronomy at the end, and has a separate atlas, thinking it useless to communicate knowledge of the earth without maps. This text is a 16-mo. volume of 215 pages. The review questions are as orderly as some questionnaires by the wise people of today. They jump from Lapland to Georgia, from Russia to Boston, and from the boundaries of North Carolina to the number of people in Pekin.

The seventh American edition of Goldsmith appeared in 1827. It is called *A Geographical View of the World*, revised, corrected, and improved by James G. Percival, M.D. Two editions of 8000 each had been sold in the United States and "a large number of wood engravings had been added." It had not, however, become a truly American book, for the United States has 11 pages, while Egypt has 16, British India 28, Kamchatka 4, Greece 11.5, and Turkey 15.5, of which 5.5 are devoted to the seraglio.

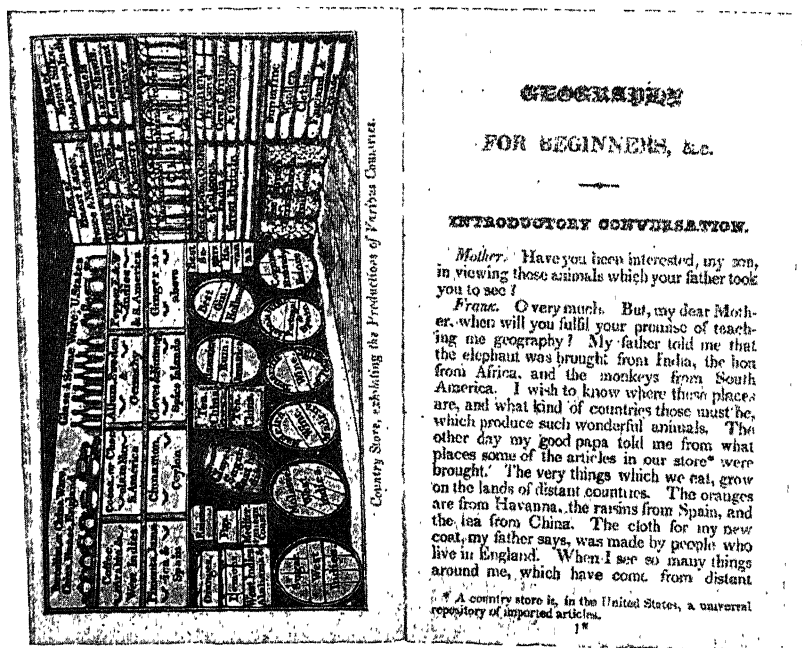
1. The First 'Pedagogical' Geographies

All in all, the children of the time must have had a rather hard time unless the teacher was exceptional. Miss Emma Willard saw the need and her *Geography for Beginners* or the *Instructor's Assistant* was published in Hartford in 1826. It was the first number of a series of geographies by W. C. Woodbridge and Emma Willard. Miss Willard was the Principal of the Troy Female Seminary, and the titles of the series were, *Geography for Beginners*, *Rudiments of Geography*, and *Universal Geography*. Points from Miss Willard's preface are: the adoption of a conversational style, intelligible to children; not to attempt too much in a small book; the child should understand as far as he goes, rather than try to go too far; begin not with the world, which is difficult, but draw a map of the home town; then to the United States and the world, deferring to this period latitude and longitude; committing to memory without inquiry, a bad habit.

It might not be easy to improve upon these principles. The first lesson tells the child how geography will help the farmer, merchant, and statesman. "Maps are the most important written language of geography."

Miss Willard closes her book with a farewell address. "The good and wise of every land look to your country to move, before the nations, as did the pillar of Fire before the Israelites, to lead the way to liberty and happiness." The American Journal of Science and Arts, reviewing this little text, comments on collections of facts imperfectly grouped, as common in geography, "so little connected by any associating principle as to overload the memory and fatigue the mind."

Miss Willard connects home geography with the wide world in the frontispiece of her book which is here reproduced. The interior of a country store in 1826, reproduced herewith, makes it quite plain that the best of people a century ago had not gone far in education for temperance.

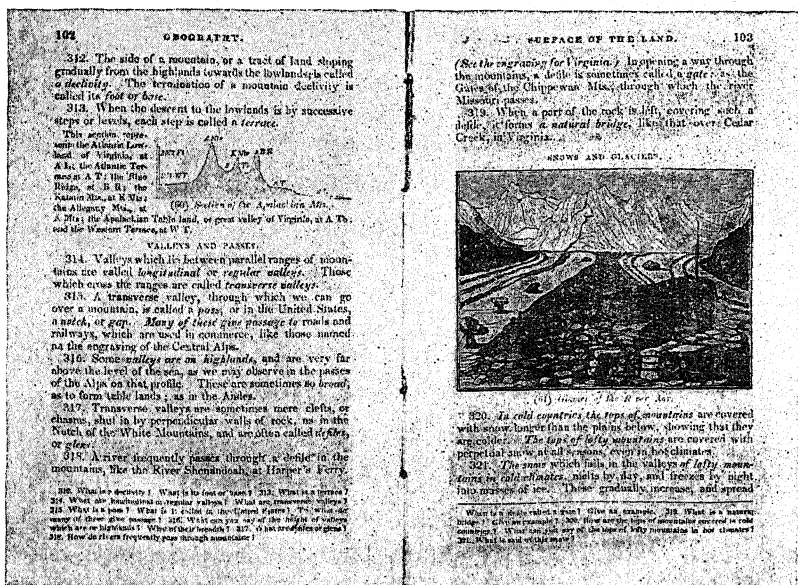


FRONTISPIECE AND FIRST PAGE OF EMMA WILLARD'S *Geography for Beginners* (Hartford, 1826)

Attention may be called to the contents of the country store and to the phraseology of the footnote on Page 1.

Mr. William C. Woodbridge, noted above in relation to Miss Willard, held no small place in the geographic texts of this period. He was a member of the geographic societies of Paris, Frankfort, and Berlin. The writer has examined his *Rudiments of Geography* in its fifteenth edition, Hartford, 1832. This edition was prepared in 1820 and in 1832 had already been sold to the number of 200,000 copies, and more. It was drawn on a "new plan designed to assist the memory by comparison and classification."

The book begins with "First Steps in Geography," thirty-six pages, the schoolhouse, directions, map and scale, the town, and travel geography. In the last-named the child goes to Washington and makes voyages on all seas. There follow sixteen pages dealing with land, water, volcanoes, rivers, lakes, seasons, climate, races, states of society, government, and religion.



TWO PAGES FROM W. C. WOODBRIDGE'S *Modern School Geography*
(Hartford, 1844)

These illustrate the appearance in texts of a new emphasis upon physical geography.

The description of countries occupies 120 pages and 35 pages are filled with "general views, topics, and tables." One could hardly improve the expression of our essential ignorance today, of the diversities of mankind: "The great difference between them has been in part produced by the difference of climate, food, dress, and modes of living and in part by other causes which *we do not fully understand.*" [The italics are our own.] Pictures were now coming in strongly in the texts, though not a few of them would not be allowed today, witness: "Selling a Circassian Female," "Human Sacrifice in Polynesia," "A Bull Fight," and an elephant trying to shake a hunter out of a palm tree.

2. Physical Geography Introduced

Woodbridge's *Modern School Geography*, a new book on the principles of the *Rudiments*, appeared in 1844. Here the notable thing is a new emphasis on physical geography. The author in his preface refers to "the new and interesting methods which have given to physical geography something of the clearness and beauty of a science." One map of each grand division is therefore entirely devoted to its physical geography. Space does not permit the giving here of the very full list of physical features discussed.

In this volume the glacial studies of Agassiz, of about 1840, were bearing early fruit in the schools. We have on page 103 a picture of the Lower Aar glacier, where Agassiz lived many weeks. This was the time of the classical surveys of New York geologists. Geography was finding its foundations.

This text was accompanied by a Physical, Political, and Statistical Atlas, with census returns. The atlas has an isothermal map, bounding belts by parallels, and illustrating the climate by small drawings of characteristic animals. Like its competitors, the volume contains a map of civilization, in four classes—savage, barbarous, half civilized, and civilized.

We must not leave the first quarter century without naming certain other texts, which perhaps held a minor position, but show the interest of the period in geographic education. In 1807, Elijah Parish, D.D., minister of Byfield, Massachusetts, published at Newburyport a *Compendious System of Universal Geography*, for schools. He uses as an argument for such study our wide political and commercial relations. Every man is a voter and may hold office. Geography is "no longer

confined to colleges and academies" and hence this book is made for common schools. Space is saved by omitting questions, which, the author thinks, turn the teacher into an "automaton." "Arguments in favor of the Christian religion, which is our comfort and hope, have been suggested as opportunity occurred."

A New and Easy System of Geography and Popular Astronomy has for its author John O'Neill, and was published in Baltimore in 1808. It is designed for mature readers and studious youth. The book uses the question-and-answer method, but many answers are a paragraph or even a page in length. A second edition, with many additions, and a lower price, was published in Baltimore in 1816, and a fifth edition, revised by James Bain, M.D., is dated 1819. Even the first edition appeared after the death of the author.

The reader has seen that the texts were published in divers cities, and here we add Portland, Maine, to the roll. The book was a *Compendium of Geography*, the author, William A. Thayer, and the date 1817. There were 88 pages of question-and-answer material, with no maps and pictures. A map of the world was supposed to be available to the inquiring child, for fifteen pages of questions are based on such a map.

J. A. Cummings, Boston, 1818, brings out *First Lessons in Geography and Astronomy*, with seven maps and a plate of the solar system for the use of young children. We quote from the preface to this primer, for such it is (82 pages). "It is found not easy to avoid the use of some words which are unintelligible to children, nor have we been scrupulous on the point, as some are disposed to think necessary; by using the best words of our language in all books of study, the means are furnished for one of the most valuable exercises that can be given to young persons, which is that of marking with pen or pencil, and looking up in a dictionary every word . . . which they do not perfectly understand and committing the definition to memory." This is rather strong diet for our coddled dear children of to-day, but has a real lesson for the word-filterers and vocabulary-makers who shudder if anything but milk or a soft-boiled egg is put before a child.

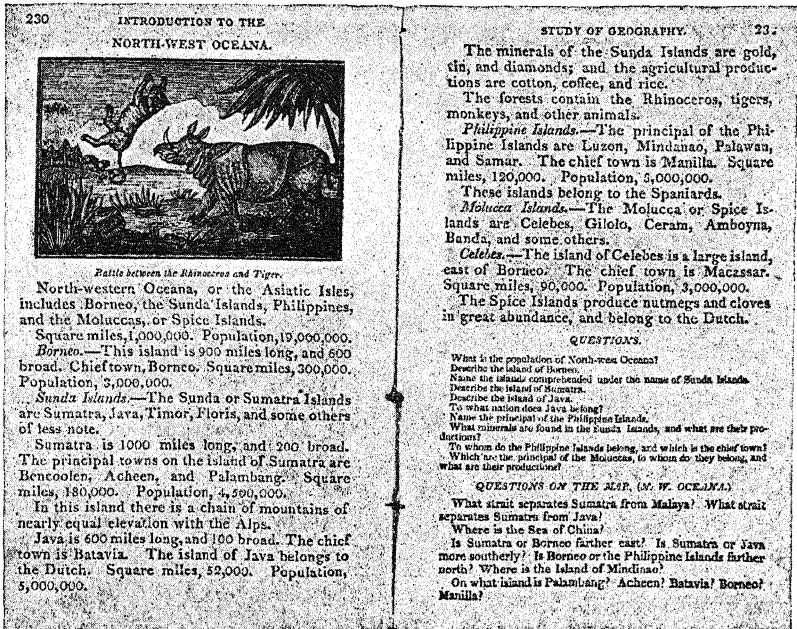
Geography or A Description of the World in three parts, has an Adams for its author, date 1820. Part first is a pronouncing list of geographic names. Part two is a "grammar of geography" with definitions and a short regional account. It is a sort of first cycle. Part three is a description of the earth, 231 pages, very well written and

designed to be read in classes. It makes a second cycle. It is accompanied by an atlas, but there are no maps or pictures in the text. The reader must have observed that the dry catechetical method by no means held the whole field in those old days.

Human nature in 1824 was not other than it is to-day, and pedagogical extremes were not unknown. No doubt then, as to-day, an open mind and a sound judgment were needed to keep a secure and sensible balance between the old and the new in education. Point is given to these remarks by Joseph C. Hart's *Geographical Exercises*—"containing 10,000 questions on maps by Melish and others." It was published in New York in 1824. Mr. Hart was principal of the "Mechanics Society School" and the preface is addressed to the school committee. Mr. Hart is a doughty champion of place geography, and would certainly slay us all if he were with us in the year 1931. He aims at a "system of pure and legitimate geography" in place of those "contemptible Easy Grammars and picture books of the science with which our schools are infested." He criticises the inclusion in geography of botany, chemistry, agriculture, geology, history, chronology, statistics, theology, and politics. "It is because children are compelled to commit this heterogeneous mixture to memory without the opportunity of location that the study becomes uninteresting. . . . Conduct a child to a map and he is on the very threshold of the science of geography. . . . Detain him from it and descriptions may be multiplied until his brightest days are buried in the vale of tears, and a distinct idea of the subject cannot be conveyed to him."

IV. TEXTS OF THE SECOND QUARTER OF THE CENTURY

An Easy Introduction to the Study of Geography, by Thomas T. Smiley, was published in Philadelphia in 1823. The seventh edition appeared in 1830 and it had city maps of Boston, Albany, Pittsburgh, Baltimore, Washington, New York, Charleston, Savannah, New Orleans, and Cincinnati. The pictures are very taking, even though some of them are rather sensational, as a rhinoceros tossing a tiger. The same author in 1838 published in Hartford and Philadelphia an *Encyclopedia of Geography*. The author reflects the new interest of his time in physical geography and geology, and his comment on the importance of geography and on the progress of discovery would do credit to a much more modern writer.



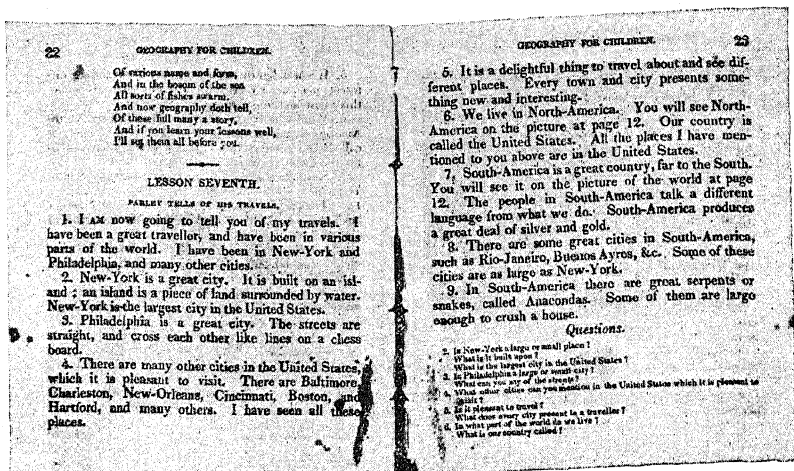
TWO PAGES FROM THOMAS SMILEY'S *An Easy Introduction to the Study of Geography* (Philadelphia, 1830)

The "Battle between the Rhinoceros and Tiger" might well relieve the tedium of the text at this point.

Geography Made Easy and Interesting, with 8 maps and 44 engravings, is the title given by C. G. Peyton, Baltimore, 1833. The catechetical method is used throughout the 94 pages. The book is very religious, has pictures of the flood, and of Joseph in state, receiving his repentant brothers. Slightly different is a polar bear on a cake of ice, looking with resignation at the hunter's spear. The most interesting feature is a product map of each continent, picturing the animals of the land zones and naming many vegetable products at the proper parallels in the margin.

1. Journey Geography Introduced

A series of texts which ran at least from 1819 (Boston) to 1844 bears the name of Samuel Worcester. His *First Book of Geography*



TWO PAGES FROM PETER PARLEY'S *Geography for Children* (Hartford, 1829)

The personal flavor is of interest. Though Peter admits that he has been "A great traveller," we may wonder whether he saw the Anaconda "crush a house."

was seen in its second edition of 1831. It is an eighty-page booklet, with flexible covers and maps. It is nearly all taken up with imaginary travel with the children. The Worcester books, like the others, show keen interest in keeping up to date in geographic facts. An edition of 1822 notes the use of the census of 1820 to replace figures of 1810. A later volume (1831) reflects the beginnings of railway travel. Sometimes horses were used and sometimes steam. "They will probably soon furnish a very common and convenient mode of traveling and carrying heavy burdens." Indeed, the essence of the social history of the first half of the nineteenth century would be found by the student of these old geographies. The characteristic changes of the time were eagerly sought by rival authors.

2. Peter Parley's Geography Stories

A sign of the growing effort to put geography where children really lived is found in Peter Parley's geographic stories for the young. "Peter Parley" was S. G. Goodrich, and the publication dates from 1829, in Hartford. This is a primer of the world with many pictures of people in national costumes, and much religious instruction.

The Child's Own Book of Geography, by the author of Peter Parley's tales, with sixty engravings and eighteen maps, was published in Boston in 1831. The author does not begin with the solar system, which is remote and difficult. "We would *begin at the other end*. We would *begin at home*, teach the geography first of the school room, then of the village or town, etc., to the entire globe." There is a full-page map of each state, and there are questions on each. Text and pictures have much flavor of our pioneer history.

The Village School Geography, by "A Teacher," was published in Hartford in 1836. The book is a primer of 112 pages. Five sorts of geographic information given or named in the introduction are not without interest. They are:

1. Rocky Mountains and level lands (Land forms)
2. Cold and hot (Climatology)
3. Trees, grain plants, animals (Biology—agriculture)
4. Oceans and seas (Hydrography)
5. People, dress, homes (Anthropogeography)

This, in the preface, is not bad pedagogy: "The numerous maps and engravings are well calculated both to *amuse* and *instruct* the youthful mind."

3. Improvement in Illustrations

A System of Modern Geography Adapted to the Capacity of Youth—such is the title of a geography by S. Augustus Mitchell, a name quite within the memory of some of the elder men and women of today. The first revised edition used the census of 1840 and is dated 1842. The book had already been widely used. It was illustrated by an atlas of 28 maps. The copy now owned by the writer is of 1849, Philadelphia, 12-mo., 336 pages. The writer does not remember the 43 pages of questions or the maps, for he never in his youth saw the atlas, but he was profoundly impressed by many of the 197 pictures in that old volume which he never used in school, but pored over at home. Some of the pictures? Yes, there was Harvard University, when Harvard 'yard' meant something; a lumber yard in Maine; a raft on Lake Champlain; schoolboys watching a covered wagon go Westward; Girard College; cotton field with slaves and overseer; surrender of Cornwallis; making tar (in a dark North Carolina forest); loading boat with cotton over a cliff; catching wild horses on the plains; Tennessee iron works; battle of Tippecanoe; Settlers' home, with Illinois College in the distance; missionary preaching to the Indians.

There are dozens more, and novel Old World pictures. And they all were printed on the memory and stirred the imagination. The magnificence of modern photography would have to go far to rival the influence of those rough woodcuts of the long ago.

Mitchell's New Series appeared in 1838 and the Mitchell series is still being issued in 1931. An advertisement in the 1870 printing quotes official acts by the Philadelphia Controllers of Public Schools, indicating that the Mitchell Geographies were adopted for use in the schools of Philadelphia in 1839, 1849, and 1864.

This edition also advertises Mitchell's *New Outline Maps* (24 x 28) giving the general features of political and physical geography of the several continents and designed to be "hung up without disturbing the exercises of the school."

The geographies of J. Olney, A.M., held over from the first half into the second half of the century. *A Practical Introduction to the Study of Geography* was published in New York, and copyrighted in 1837, but a first edition dates from Hartford in 1828. From the preface we read of geography for children, "it treats of visible objects," "the first study of childhood," "commenced in the nursery, extended to the yard, the garden, the field, the road, etc." This text was amply illustrated with maps in color and with pictures and had a full outfit of questions.

A Practical System of Modern Geography in 1847 was essentially the same volume in its fifty-fifth edition. This text was accompanied by one of the earliest atlases, copyrighted 1837. Most of the included maps were copyrighted in 1829. The publishers refer to the "immense patronage" that the work had received. The ninety-second edition was published in 1855 and a printing in 1860 rounded up a full hundred editions.

An attempt for young children is found in *My Little Geography*, by Mrs. L. O. Tuthill, 16-mo., 138 pages, Philadelphia, 1847. Its religious tone is quite too solemn for little folk. It departs from other texts by not "resorting to imaginary lines and circles." "There are short chapters, with pictures; each chapter ending with a verse."

According to Mrs. Tuthill, a natural thing, such as a flower or a "division of land," is made by God. "Can we alter them? We Cannot."

The largest cities must decay
And every man must Die
But the divisions made by God
Are changeless as the sky.

In lessons on climate, of which there are several, appears this lyric gem:

When fast it pours
And thunder roars
Then raise an earnest prayer
To Him whose power
Has sent this shower
To purify the air.

Yet some lessons are surprisingly good—not the least that on soil and the one on minerals. There is a choice picture of Adam, unclothed, naming the animals. Perhaps some of our present-day geographic pedagogy will in like manner raise a smile when the geography experts of the twenty-first century drag us out into the daylight of their criticism.

William Warren, Principal of the Windham High School, brought out a *Systematic View of Geography* in Bangor, 1842. It had globe diagrams but no pictures. The world has not changed so much in a century, as witness from the preface: "The world is already flooded with books, especially *school books*, and not a little to the annoyance of teachers and the perplexity and confusion of scholars." Six pages are given to an account of Christian missions, but they are pages quite free from sectarian bias. The third edition, of 1844, added pictures and an atlas. Rivalry stands out somewhat in the remark that "We have taken a medium between the scantiness of Field's *Atlas* and the fullness of Smith's and Olney's."

4. Geography in Rhyme

A curious scheme for memory was devised in the books of rhyme, of which a sample is *The Musical Geography*, a new and natural arrangement of all the natural features of the Globe, by Miss Sarah M. Lyon, published in Troy, 1848. The preface dilates on the power of music in a "noisy rat of a boy or a stormy young miss," and doubts not that at some time physical geography will be taught in no other way. Physical geography is here used in the sense of location. Then comes an ardent invitation to the children for fireside travel. "We will stay at home and go everywhere, singing as we go."

The Mother's Geography, New York, 1842, must be full of heresy. Hear its preface: "There is no study, except perhaps, the elements of geology that can be taken up so early and rendered so agreeable to a

child, nor one that so well prepares it to pursue with interest and advantage, the sister sciences." From which we observe that physical geography may be very good for children, that making study agreeable was not first thought of last evening, and that, without apology to general-science courses, geography is a good general introduction for all sciences.

Zadock Thompson published in Burlington, in 1849, a *First Book of Geography for Vermont Children*. Probably it was not important to know the Ompomponoosuc River, but the primer, in the hands of a good teacher, must have enriched the mind of a Vermont child. We suspect that Calvin Coolidge would approve of this rhymed version of his native state,

In most of the earth's products of excellent kind
Our state equals others or leaves them behind.
If we cannot raise wheat as much as we please
We can produce sugar and butter and cheese
And beef, pork, and mutton of qualities rare,
Of horses and cattle we have many to spare.
We have wool in abundance and with it the power
To turn it to cash and the cash into flour.
Iron, copper, and lead in places are found
And granite and marble and soapstone abound.

The texts of Roswell C. Smith seem to have had a large vogue, beginning with 1835, and running at least to 1855, with a twenty-fifth edition. This text is notable, or possibly amusing, for its vivid pictures, of which some are rather sensational. The author was not above going out to make a hit, if he could, witness: lava overwhelming a city; the harpooning of a whale; the earthquake at Lisbon; a water-spout; and a group at a "Freeman's meeting" waving the flag of "Equal Rights." There is a Chinese opium smoker, which could not now be tolerated in a schoolbook, nor the picture of an Indian tomahawking a woman. The Norwegian maelstrom is still on duty, William Tell is shooting Gessler, a boat's crew is fighting a boa constrictor, and a lion is carrying off a Hottentot. Surely, geography could supply some thrills in those days.

A sidelight on conditions of the times is indicated by a map of New England in the 1843 *Atlas* to accompany the author's *Geography for Schools*. This map shows two canals in use in Connecticut and Massachusetts, and railroads in Connecticut, four in all, extending north from tidewater points.

That rivalry was abroad in the schoolbook world is indicated in the following note on the 1843 edition of Smith's text: "These corrections have been made with scrupulous regard for the pledge given the public in 1840. No other alterations will hereafter be attempted, but such as the progressive changes in the science may require. These, it is intended, shall not change the form of the book, or impose any impediments to the use of the different editions in the same class."

The Smith announcement of 1843 has this rather wholesome word on "the impolicy and folly of one author decrying the works of others, for usually a little time reveals to himself the startling fact that he has a beam in his own eye and not infrequently is obliged to make the humbling confessions to the public."

5. Atlases, Colored Maps, and Graphs

Several of the texts that we have reviewed were accompanied by Atlases. These were generally limited in the number of maps, some of them crude and all reflecting the limitations of contemporary knowledge. With the Morse series was a *New Universal Atlas of the World*, with twenty maps. There were nine maps of the countries and groups of countries in Europe.

Huntington's *School Atlas*, by Nathaniel G. Huntington, was published in Hartford in 1833. There are ten maps and several tables. There is a world map with climatic belts and rather extended records of production names in the appropriate zones. The chronological chart begins with Adam and Eve, 4004 years B.C., and ends with Andrew Jackson, 1829. There are tables of the leading universities and libraries of Europe.

An atlas to accompany the Malte-Brun *School Geography* was put out at Hartford in 1830 by S. G. Goodrich. The special maps include New England and the Middle States, Maryland, and Virginia. An edition of 1838 was published in New York. The Southern States are here given a map, also the "Western," which run from Ohio and Kentucky to Iowa and Missouri.

A *Modern Atlas*, adapted to Morse's *School Geography*, appeared in New York in 1828. This carries on the back cover an advertisement of the following Morse works: *Universal Geography*, *Ancient and Modern*, *Universal Atlas*, *School Geography*, *Universal Gazeteer*, *Gazeteer of United States*, and *Geography for Children on a New Plan*.

An atlas "Designed to illustrate the Elements of Modern Geography," prepared by Joseph Griffen, was published in Glens Falls, in 1833, and sold in Troy, Albany, Rochester, and New York. In this atlas is an "isothermal chart," or "View of the comparative temperatures of different regions." This is a colored world map, giving limits of products. Inset is a colored diagram of comparative temperatures at sea level, with the heights above it.

Smith's *Atlas for Schools, Academies, and Families* went with the *Productive Geography* of Roswell C. Smith. The world map is a "chart," "exhibiting the actual and comparative size of each country, nation or kingdom; its population as a whole and to a square mile, also the different states of society, forms of government and religion." Smith's *Atlas of Modern and Ancient Geography* (New York, 1853) has about two-dozen tables of statistics, census of 1850, and thirty-five maps. There were eleven maps of states and state groups, reflecting the growth of territory and its occupation. The table of chronology in American history begins with Columbus and ends with Franklin Pierce.

Mitchell's *School Atlas* was published in Philadelphia in 1850. This year appears to mark a great advance in the fullness of statistical and map data.

V. TEXTS OF THE LAST HALF OF THE CENTURY

1. Commercial Geography Introduced

In the years 1854 and 1855 appeared two series of school geographies—one of which is still on sale—that were to lead the school world for a decade. These were the series of texts by Cornell and by Colton and Fitch. They were both developed around the question-and-answer method, and the textual material was in each case very concise and definite. In both books the maps were accompanied by a system of pronunciation of proper names—an innovation in textbooks. Colton and Fitch introduce comparative scales and give exercises on the study of areas. The Cornell *Atlas* of 1855 maps the states and territories according to the outlines of today, except that the Dakotas are not divided and Montana is included in Idaho.

Much attention is given to statistics, including commercial statistics, and lists of products of world interest. Commerce is centered largely on New York with the statement that a "multitude of vessels come here and go hence."

It is interesting to note, as one views the several volumes in succession, how the maps vary in amount of locational detail. Some authors pride themselves on the omission of inconsequential towns; others, on their inclusion. Probably the latter plan, though unduly distracting to the pupils, was in the long run of the greatest educational value, for the reason that in many houses the geography was the only book of reference for adults. The writer remembers in his youth that the school geography was consulted frequently not only by the members of the family, but also by others in the little rural neighborhood. It was one of three reference books that comprised the family library.

2. A New Emphasis on Physical Geography

A decade later three very significant series of geographies appeared: by Guyot, 1866; Warren, 1866; and Maury, 1868-70. These series held undisputed sway for ten years and are interesting in plan and scope. Guyot, a trained geographer and long Professor of Geography at Princeton University, in association with Mrs. Mary H. Smith of the Oswego Normal School, planned and wrote his series to follow the principles of Pestalozzi. The plan was carried out in four books, three of which form a series organized according to the following philosophy: "The nature of the mind is such that the acquisition of knowledge is always gradual. That gradual progress, whatever be the object of our study, has three main stages. We first take a general outside view of the object or field to be studied; we then fairly go into the study of all its parts; last of all we derive from this thorough analysis the means of rising to the knowledge of the laws and principles which regulate and pervade the whole, and we combine all its elements in a well connected organization, in which the mutual dependence of all these parts, and their coöperation to a final end, are clearly understood."

3. Type Studies Used

Following out the method, the introduction is devoted to a series of journeys to 'type' sections—a plan that was revised and revived much later through the work of Dr. Charles A. McMurry. Guyot's first book contained two maps, combining the physical and political features. One map was of the United States and the second of the world.

4. Causal Relationship Introduced

The later volumes in the series follow consistently what has commonly been called the 'topical' method, with the causal order followed closely but the causal relationships rarely suggested. For the first time the larger relations of surface, climate, and life were included in a text with many large generalizations and illustrations by maps and diagrams. The books were so organized that a trained teacher could readily develop thought questions, while the larger number of teachers, poorly informed in geography, could still use the time honored question-and-answer method.

Maury, who had had a brilliant scientific career as meteorologist and oceanographer, and who had been Superintendent of the Naval Observatory in Washington, and also an officer in the Confederate army, wrote his series of geographies in England. The general plan of the series is indicated by the titles of the three books: *First Lessons in Geography*, *The World We Live In*, and the *Manual of Geography*. This series, still existing, was very readable and teachable, and yet added no distinct contribution to the educational progress of geography.

Several of the texts of the time gave a strong emphasis to physical geography, with special chapters often unrelated to the rest of the text. It was Maury who first prepared for children an adequate, all-round presentation of what he called "the terrestrial machinery which makes day and night, seed-time and harvest; which lifts the vapor from the sea, forms clouds, and waters the earth; which clothes it with verdure and cheers it with warmth or covers it with snow." Physical geography was then considered an advanced subject for older children, and the writer well remembers the disdain with which he was snubbed in the rural school by a pupil who was old enough to study physical geography.

5. The Cycle Plan Used

The Warren series, 1866, was the first definitely to follow the concentric plan that persisted for so many years. The table of contents for the *Primary* book is an epitome of the second, or *Common School Geography*. Warren first introduced memory map-drawing, following geometrical outlines.

The same system by Apgar was used later in the Montieth and the Swinton series and in a modified form in the Harper series. In fact, the table of contents of the four series is nearly identical, though

Montieth appeared in 1872, Swinton in 1875, and Harper in 1877. Some of these texts are still for sale, though under a different name.

The Harper series that followed the Warren in the school experience of the writer appealed partly because of its better type, better paper, and brighter maps. Here again, the concentric method was followed, the first, or introductory, geography having the unique feature of indicating in each section what the pupil was "To Read" and what "To Recite." The Harper series made commerce a strong feature in the upper book.

Several series of texts, some of them compilations by unannounced authors, appeared in the next fifteen years; but no book made a real stir in the geography world until the publication of the Frye series in 1895—a series that appeared in many combinations until today.

6. Influence of the Report of the Committee of Ten on Geography

Following the famous report of the Committee of Ten, interest turned from political to physical geography and geography became alive again. Frye was the first to consider the earth as dynamic instead of static, to include earth processes and the modern classification of land forms. While man was made the central theme of the series, the interest was largely in the newer physical phases of the subjects. Frye made the 'World Ridge' a byword in schools, and he was the first to make use of the exaggerated relief maps of continents and countries. An interesting feature of the series was a volume entitled *The Complete Geography*, in which the continents were treated twice—the first instance of a one-book series, since so much discussed.

Very promptly following the Frye series came the *Natural Series*, by two skilled and successful authors. This series was not so severe or extreme in its newness as the Frye and yet retained the most significant of the new ideas. In this series star-shaped maps were used for the first time and heat belts were included as basal for understanding the distribution of man and of products. Light zones had masqueraded as life or as climatic regions hitherto.

Many competitors of these two significant series appeared promptly, and some were successful. They were, however, not destined to have the influence on school geography exerted by their precursors. One series was especially interesting, in that the plan was followed of including the text in a small octavo volume and the maps and illustra-

tions in a large quarto volume. This may have given the inspiration to the next series—and the last to be considered in the century, the Tarr and McMurry series, for this series for several years was printed in octavo form. One practical disadvantage to this size, as teachers soon reported, was that children had no large book to use as a portfolio in carrying lesson papers and exercises to and from home. Later the octavo form was discarded and the publishers returned to the small quarto form which is now so common.

7. Introduction of Human Geography

The Tarr and McMurry series, 1900, appeared in two forms, a three-book and a five-book combination. The five-book combination returned to the plan tried in the middle of the century of beginning with local geography. The volumes, in order of expected usage, were: *Home Geography*; *The Earth as a Whole*; *North America*; *General Geography, South America and Europe*; *Asia, Africa and Review of North America*. Home geography was introduced through a study of soil, which is not a familiar object to the larger number of young children in the country. Then follow hills, mountains, valleys, rivers, ponds, and lakes; the ocean, air, industry, and commerce maps. About four-fifths of the volume is devoted to the physical side of geography, with a constant interweaving of the human and life relations.

Throughout the series causal relations are constantly emphasized and generalizations are gradually developed as the increasing age and experience of the pupils warranted. The plan of the series is based on Pestalozzian principles of teaching, as was the earlier Guyot series, and the series was, in consequence, very teachable and very usable. The thought questions for review and study were especially helpful and stimulating.

The authors for the first time included collateral reading references that helped to encourage individual work on the part of both teacher and pupils. Such an innovation was most pertinent. Supplementary readers and periodical articles were easily available, and too long had children, and perhaps teachers, thought of geography as a completed subject, with all that was 'fit to print' enclosed within the pages of the common-school geography.

VI. SUMMARY

The Tarr and McMurry series was a fitting climax to a century of growth, experimentation, and rational progress in school geography.

Geography had advanced as a science, in large part through the explorations and publications of American geographers. School geography can advance no faster than the science as a whole, and indeed must necessarily lag a bit behind the science. With increasing knowledge of our own country and the world, with increasing international relationships through commerce, with advance in educational methods and philosophy, the content and character of school geography had gradually changed. Each series of important geographies reflected the educational interest of the period. Gradually the human and life side of geography became more significant and was given more adequate consideration.

The century closed with human geography coming into its own, and the later books laid a foundation for the many changes of the last thirty years. The pendulum of interest and of emphasis may swing from one extreme position to the opposite with changing interests of the leaders in the science or in education, but the fundamentals are unchanged. Man lives in a physical world with social contacts and relationships. Geography, in any phase of development, is not and cannot be a purely social subject. Its basis is physical in a broad way, and its superstructure can only be built as the base is made strong and complete. The books of the century reflect this fundamental concept, almost as a unity, and indicate that throughout the period the watchword was to progress with the times, and yet sanely and safely.

CHAPTER II

HOW GEOGRAPHY CONTRIBUTES TO GENERAL ENDS IN EDUCATION

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As an abstract idea it seems plain that an important part of an education should be a thorough acquaintance with the world, since we are to live all our lives upon this earth, to receive from it our food, our incomes, and most of our physical and mental impressions, and since all of us are more or less engaged in working out a culture and a civilization that are influenced by the geographic environment in many ways. What is this environment? As yet most American high-school and college students get no answer to this question. They are supposed to have learned it in the elementary school.

I. GEOGRAPHY IN THE AMERICAN COLLEGE

If college education is preparation for life, we may consider the place of geography in this preparation as the study of (*a*) the seat of industry and trade-economics; (*b*) the study of the seat of civilization—history, political science, and sociology; (*c*) the background of literature.

1. Geography and Economics

Geography has arrived in at least a part of the field of economics. About half a dozen American universities have schools of business or commerce or finance or business administration, with elaborate curricula, and many colleges are imitating them as nearly as they may. Geography has attained a prescribed place in the course of instruction in all the larger of these schools of business administration, with one possible exception. Those who are definitely training men for business see that economic geography is a necessary part of the mental background of the person who is to deal with production, buying, selling, export, import, credit, banking, or accounting. All these collegiate schools of business administration have one required general course in economic geography. Some of them have two courses required, and

most of them have specialized courses dealing with the particular continents in greater detail.

The amount to which these continent courses are taken by the student depends in part upon the professor. Most professors, however, will recommend that their students take six or seven courses in banking or accounting, and only the required general course in geography.

The elective courses in economic geography in the schools of business suffer because of the fact-mongering character of the average undergraduate. Such students think that a concrete, specific, technical course is valuable. They will fairly line up to take a course in stock exchange procedure or foreign banking, when their real need in preparation for finance is an understanding of the industries of the continent or continents with which they may do business. These students should be taking the economic geography of that continent. This point that I am making about the undergraduate mind is general, not limited to geography. Students dodge background courses that they need and hunt technical courses, most of which they will never use.

In the collegiate courses in economics outside the schools of business administration there is a growing realization that a course in economic geography is a desirable part of the mental background of the student who is to understand economic situations and economic theory. This, however, is not yet strong enough to result in many prescribed courses in geography in the arts college.

2. Geography and History, Political Science, and Sociology

The relationship between geography and history seems self-evident, especially in such survey courses in history as result from the great impact of Mr. Wells' *Outline of History* upon western education. But in many cases history is mere dramatic episode; it is almost valueless, because it is completely unrelated to place, which is necessary to explain it.

Certainly any course in the history of any country should be preceded by an understanding of the geography of that country and of neighboring countries that have influenced it. Conversation with professors interested in history and its teaching had led me to the belief that this idea prevailed among them. To check it up, I recently sent a questionnaire to fifty new doctors of philosophy in history inquiring as to the amount of geography that they had had in their collegiate or

graduate education. One of the fifty had read a few books voluntarily! None had had any geography prescribed!

Political science and sociology seem to be very much in the situation of history: a friendly interested attitude on the part of the professors when talking about geography as an abstract proposition, but a fairly complete forgetting of the subject when they are prescribing courses for their students. Their own subjects seem to be so large!

3. Geography and Literature

Literature deals with human nature, human life, and a background. All fiction has a setting. To see this point illustrated to the *n*th degree, read one of Joseph Conrad's novels: *Heart of Darkness*, or *Lord Jim*, or *Nostromo*. The readers of fiction would enjoy it more if they understood the geography of its setting. Certainly the authors of fiction, like the authors of history, would do a better job if they knew the geography of the places where they lay their stories.

A consideration of these points makes it apparent that a knowledge of geography is a necessary part of a general education.

A general course in world geography should be as standard a part of the education of the student in the American arts college as is English. It is a necessity to the intelligent reading of the newspapers. The episodes reported from day to day in the press tend to be isolated facts of little meaning unless one understands the background. It is like getting the mere name of a stranger. "Alfred Andrews" does not mean anything until we know that he is professor of French in the So-and-so college, or the vice president of the So-and-so bank, or the chief engineer of the So-and-so railroad. In exactly that way a good course in geography introduces the news.

For example, when Japan invaded Manchuria last fall I felt that I understood the situation in general, but I wished to know something about the quarrel in particular. Therefore I took down Isaiah Bowman's book, *The New World*, which has never yet failed to explain the old quarrel that lies back of any international flare-up that gets on the front page of the daily paper. This book explained the various frictions and negotiations that lay back of the quarrel, while my general studies in economic geography gave the causes for the frictions. I felt that I understood the play.

This necessary course in college geography for cultural purposes should be a general course in geography. It should cover the whole

world. It should be finished in one year. It should leave the student with some such regional understanding of the world as is shown in the book by Unstead and Taylor, *General and Regional Geography*, or Jones and Whittlesey, *Introduction to Economic Geography*. This general course should be made upon the clear recognition of the difference between the culture course and the professional training course. One of the banes of American higher education is the fact that nearly every collegiate department thinks of itself as a professional school. We can find plenty of examples in history, language, literature, or the sciences. Thus, chemistry is usually organized systematically for the making of chemists: first course, general inorganic chemistry; second, qualitative analysis; third, quantitative analysis; fourth, organic chemistry; fifth, physical chemistry; sixth, industrial chemistry. That is all right for the making of chemists, but any one part of it is a poor contribution to the general education of a person who needs to know something about what chemistry is and does, but never expects to be a chemist.

By exactly the same philosophy the preparation of a professional geographer requires good instruction in geology, physiography, meteorology, climatology, economics, history, political science, statistics, cartography, and map interpretation. On this foundation he is ready for general, economic, or human geography, and the detailed study of the continents or parts of them and particular research problems. But the general cultural course in geography should dip understandingly and interestingly into many parts of this field and cover enough in one year to give the average student a working understanding of all the countries and all the continents in the world. He would then have pigeonholes for the news.

If we could have a generation of American college students, all of whom had such a course, we would have a very different crop of books presenting history, economics, political science, and sociology, subjects all of which are usually presented by persons essentially ignorant of any geography other than the sixth-grade geography, which was often little more than place geography when they studied it.

II. GEOGRAPHY IN THE AMERICAN HIGH SCHOOL

The American high school is twins. Why is the student in the high school? Is it his little college, where he finishes his formal education; or is it his preparation for college? It is a shame that our

high school is not more sharply differentiated because of these two sharply different objectives.

If the high school is the end of the student's education, it should contain a course that does on the high-school level the same thing that was called for in the college cultural course in geography. The high schools of commerce are a small edition of the collegiate schools of business administration, with the addition of typewriting and stenography, and, like the collegiate schools of business administration they have economic or commercial geography as a very general prescription.

III. GEOGRAPHY IN THE ELEMENTARY SCHOOL

The elementary school is the place where geography may render its greatest service to modern society. Civilization is in a swift process of being made over. We have come into a new time with old ideas. We all think of ourselves as being modern, but when a gentleman dresses up in his cutaway coat, there are buttons on the back of it, as a survival of the time, some centuries ago, when gentlemen wore sword belts. He tips his hat to a lady, as a survival of the time, long ago, when his, or someone else's, ancestors wore armor, helmet, and visor, and the knight took off his helmet to show his face, to signify that he was a friend. By identical processes of survival our minds in this age of machinery are full of habits, attitudes, points of view that date back almost to the cave man. To see a fuller exposition of this antiquity of our mental content read James Harvey Robinson's *The Mind in the Making*. It will help to the painful realization that our political thinking and our economic thinking are generations, perhaps even a century, behind the economic mechanical techniques.

1. The Machine Age and the New World of Closer Relations

I suspect that few of us fully grasp the vast making-over of our thinking needed before we shall be able to bring our national and international affairs within a reasonable distance of the possibilities of comfort and good living that the machines even now make possible. From Nebuchadnezzar to George Washington our world made its living by the use of human and brute muscles and depended upon the neighboring fields for its sustenance. It carried its freight in wagons and sailboats, wrote with a pen, sent hurried messages on horseback, and heard the news a month or a year late, if it heard it at all. Suddenly

the age of machinery has arrived. Our meals, our clothes, and a hundred materials all about us come from the ends of the world. World trade forces itself into the economic side of our lives at every hour of the day, and our geography lessons are properly filled with it. World information is here in every morning paper.

World investment has also arrived with its billions in foreign lands. In many senses we have already become citizens of the world. We did not plan it, nor can we escape the host of unexpected and most perplexing problems that this age of machinery has dumped upon us. Some of these problems have been solved. You stick a stamp upon a letter and it goes safely to any one of several score of far countries. It may even pass safely through war. That is one international problem that has been fairly well solved, but it took a lot of work and planning to get it started, and to keep it going there is continuous coöperation of many men of many nations, every moment of every day and every night.

The travelers' check, the international travel ticket, the international bill of lading are other smooth-running examples of international coöperation.

More than two hundred and fifty different things are already being done by international coöperation, and their number is steadily increasing. But the big problems, the ones that promote international frictions and international jealousies, are not yet settled. Many of the best minds in the world are deeply concerned. Can we develop international coöperation fast enough to outrun the forces that make for international war with its almost undreamed of tools of destruction?

There are a hundred different ways to work for better world relations, but they all need to start from a basis of knowledge—knowledge of foreign countries, of foreign peoples, and the conditions and problems that make them as they are.

This is the great opportunity of the geography teacher—to introduce the children of this generation to the country in which they live, and also to the countries and peoples with whom it seems inevitable that they must have ever-increasing contact.

2. Preparing the Students for the New Citizenship

In teaching geography, especially in the elementary school, we should keep ever in mind the two classes of results: first, the facts that we teach; and second, and much more important, the attitudes

toward life and toward peoples. The big question is: do our students leave us with attitudes of increased respect, sympathy, and understanding, or with their opposites?

a. *Teaching Respect.* The machines are compelling us, in effect, to live ever closer and closer to other peoples. To get along with each other, the nations must learn to respect each other. We need to teach the children of America to be mentally polite to other nations, just as we want them to be personally polite to their neighbors; then they will begin to respect other nations.

In making children acquainted with foreign peoples, we have an unfortunate instinct to overcome, the herd instinct, the instinct for likeness as against unlikeness, the instinctive egotism that makes us feel that things different from our own are not so good as our own. We see a bit of this creeping out in the definition of the word *barbarian*, which is nothing but Greek for *foreigner*.

The wide-open road to teaching respect is furnished by the *skill* of foreign peoples. Look at the Eskimo's boat, made in some cases of skins sewed together with sinews and stretched around a framework of bones. In this skillfully made boat sits the lone paddler, with his blouse of waterproof skin bound tightly around the opening of the boat and around his wrists and neck. If his boat upsets, no water can get into it. With a flip of his paddle he turns it upright and paddles on. This is one of the most marvelous marine creations of the human race. And look at the materials of which it is made! The examination of the Eskimo's tackle reveals case after case of skill quite beyond any hope of rivalry by the children in our schools.

Again, we find similar illustrations in the study of the American Indian. Nearly every school is within reach of at least an Indian arrowhead or pictures of Indian things. Could the children of the school or their parents make these Indian things? No. Shall we disrespect the Indian, who is our superior in certain kinds of handicrafts, or shall we esteem him as a master workman with abilities different from our own?

Again, take the Bushman of Australia. Perhaps it will be pointed out that he is one of the least intelligent of men, with the lowest social organization. But look at the boomerang. It is one of the most marvelous missiles in the world. Can any of our athletic boys throw a boomerang so that it will return to the thrower? Or can any of our intelligent ones identify tracks as the Bushman can?

Once the children's minds are directed in these channels, they realize that here, at least in some things, are their superiors. Similar examples can be pointed out for all the various peoples of the world. Once the teacher has the theme, the great idea, the material is at hand, or easily to be found, for the inculcation of respect for the skill and many other achievements of peoples of other lands—German science, French art, Chinese and Japanese art. There is always the fact that the child cannot do these things, that his parents cannot do these things, and that we must respect these people as our superiors in these particulars. Incidentally, it might well be pointed out also that the Eskimo and the Indian and the native Australian do not have financial panics, depressions, or periods of unemployment.

b. *Sympathy.* World peace depends upon sympathy between peoples. Antagonism leads to war.

The commonest basis of human relationships outside the family is the fellowship of common activity or interest. We get together as teachers; as spectators or players of baseball, cards, or golf; as breeders of bulldogs, or chickens; as members of sewing societies, engineering societies, horticultural societies, labor unions, manufacturers' associations, or garden clubs.

One of the great facts for the teacher of geography to emphasize is the study of peoples, *as people engaged in the same jobs as ourselves*. Men are everywhere making a living, making a home, educating their children, making a neighborhood and a government. In these fundamental activities we are like the Eskimo, the Bushman, the Indian, the Frenchman, the German, the Englishman, and the South American Indian. We are all fellow craftsmen, and it is thrilling to discover these facts.

Take the simple matter of food. All the world is a great group of fellow craftsmen who are engaged upon the endless task of feeding ourselves, and the geography class gives continual opportunity for comparing the work of these differing craftsmen as they seek and achieve this common end in so many different kinds of places. The farmer in Colorado or Minnesota or Maine or Ireland or Germany or Russia digs potatoes. This is the same kind of thing that the native of the tropic forest country does when he digs cassava roots or sweet potatoes or yams, or cultivates his bananas. The farmer with his reaper is engaged in the same task as is the Hindu or the Chinese or

Japanese or Filipino who wades about his rice paddy, planting and weeding his rice. The aim of all is to supply grain for hungry populations.

We have the same chance to create interest and sympathy in studying about clothes, food, shelter, and tools of all mankind. So also with governments. This is a particularly good opportunity to show that perhaps our government may be better than others, but in the next breath we ought to point out where our own might be improved. There are few things of which we have greater need than the knowledge that our own country is not without faults. Thus the child will gradually come to realize that his country is a country that may change for the better—a country of progress. No child should be allowed to think of his government as finished. He may love his country best, but if his love takes the attitude of undue superiority over other countries, he becomes cocky and a trouble-maker. To realize the fact that one's government is still capable of improvement tends to develop sympathy with other peoples in this the most difficult of all human tasks—government, the creation of society.

The comparison of the craftsmen and of the day's work in our own country with those in foreign countries will lead almost inevitably to the realization—indeed, to the proof—that our opportunities for making a living are better than theirs. This explains the desire of the foreigners to move to this country and brings up the question of immigration.

In this concept lies again sympathy rather than antagonism. Incidentally, also, it places upon us the necessity of vast good manners in order to keep antagonism out of the hearts of the poorer ones who are shut out of this rich Eden.

c. The Desire to Understand. For effective coöperation and peace we must have understanding. Prejudice leads to friction and war.

One night my neighbor, who likes to call himself a "one-hundred-percent American," walking up the street with me from a lecture about a foreign country remarked, "Yes, but those foreigners do such foolish things." That is the stuff of which war is made. The foreigners do not do such *foolish* things. They do such *natural* things, as we can see if we really understand them, their position, their past, and their problems.

The great spiritual and mental test for success in the teaching of geography is the creation of *understanding*. We present to the child

the fact that a foreign people is different from ourselves. What is his first reaction? Does he without understanding judge such a people and dismiss it with a bad name, as Wop, Dago, Guinea, Greaser, or some such? Or does he desire to understand why this people is different?

It is easy to see reasons why the house of the Far North is of skin or snow, why the house in the mountains is of wood, that of the desert's edge of sun-dried brick, that in the tropic forest of grass and thatch, that of the city of burned brick, and that of Italy of stone. The foreigner has done what he has done for what seems to him to be a good reason, and it is probably true that if we had been in his position, we should have done very much as he has done. Were not our ancestors, but a short time ago as history runs, primitive people, living in the woods in a way that we often call 'savage'? We believed in witches only day before yesterday as history counts time. We have changed from this condition chiefly through the discovery, but yesterday, of new knowledge, which in turn has brought us better opportunities. One of the interesting things of the world is the speed with which other peoples change also when new knowledge and new opportunities come to them. The geography class gives many opportunities to emphasize this point.

If we know enough geography and enough history and enough human nature, we shall find that the foreigner is neither queer nor foolish, but that he has done very much as we would have done under the same circumstances.

IV. CONCLUSION

We teachers of geography know that the names of capes and mountains will fade from the student's mind, that many of the rivers and capitals will melt into an indistinct haze, that many, perhaps most, of the facts will be gone from our students when, at thirty-five or fifty-five years of age, they turn their votes into the ballot box that decides some world crisis. We, the teachers of geography, should realize that the frequently recurring opportunities of the geography class mean this: that to us more than to all other social agencies combined is given the power to decide whether the future act of the voter shall be an act of respect or disrespect, of sympathy or antagonism, of understanding or ignorant prejudice—whether war shall wreck us all or whether we shall put it into the limbo where now the personal duel resides, buried by a better method. Now that a better way is

established, the gentleman finds that he can get along perfectly well without puncturing his fellow man with a rapier or a bullet. This world is so rich, so very rich, in resources and in the scientific, mechanical, and economic possibilities of better living and of a better civilization. These possibilities can only be realized by the working together of large groups of people within national boundaries and across national boundaries. This requires vision, imagination, ambition, and the wide-reaching concepts that can arise from geography well taught.

This opportunity of the geography teacher is made even greater than it seems by the fact that most adult activities are bent toward the realization of desires conceived before the age of fifteen years.

CHAPTER III

THE PLACE OF GEOGRAPHY IN HIGHER EDUCATION

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I. THE RISE OF UNIVERSITY GEOGRAPHY

The rise of geography in America as a branch of higher learning has been remarkably rapid even in this age of swift change. When, in the eighties, representatives of the Royal Geographical Society asked one of the great English universities to admit geography to the curriculum, their plea was rejected. They were told that geography was a study suitable for children but was scarcely worthy of a place in a university. Most of the men who received that rebuff lived to see that attitude reversed and geography introduced into nearly every one, if not every one, of the eighteen universities of the British Isles—indeed, in at least ten of them it may be taken for the honors degree.

Every one of the sixteen universities of France offers geography, and it is especially strong at the Sorbonne. There is at least one—and usually more than one—professor of geography in each of the twenty-three universities of Germany, a total of about seventy professors in all. Geography is offered in twelve universities of Italy, four of Belgium, seven of Switzerland, four of Sweden, four of Poland, and in one or more universities in virtually every other country of Europe.¹

In America few, except the geographers themselves, appreciate how rapidly the science is growing in our universities; not only growing in the number of institutions in which it is seriously taught, but growing in the respect which it is commanding in those institutions,² even

¹See Joerg, W. L. G. "Recent geographical work in Europe." *Geog. Rev.*, 12:1922, 431-484.

²See Miller, Geo. J. "Twenty-five years' growth in collegiate geography." *Jour. of Geog.*, 21:1922, 34-37.

Also Whitbeck, R. H. "Geography in European and American universities." *Jour. of Geog.*, 18:1919, 129-141.

Also Brigham, A. P. "Remarks on geography in America." *Jour. of Geog.*, 12:1914, 202-205.

though the science still suffers because of its name, which is inevitably associated with children's studies.

An investigation completed in 1929, covering the published catalogs of 398 American collegiate institutions, shows that 319, or 80 percent, of them offer courses in geography.¹ In a score or more of the largest and strongest universities there are graduate departments of geography giving one, two, three, or more years of post-graduate training leading to the higher or to the highest academic degrees. More doctorate degrees in geography are now being granted each year than existed in the whole nation fifteen years ago. Geography faculties with teaching staffs numbering eight, ten, or even more, are found in several institutions, and in these schools the number of student enrollments in geography yearly runs about a thousand.

Geography is well established in American higher institutions, as it is in European, and full recognition of the subject has been pretty generally accorded. It remains for geographers to improve the opportunity thus opened to them and to make university courses worthy of the place that has been given them.

II. THE CHARACTER AND FUNCTION OF COLLEGE GEOGRAPHY

"But," we are asked, "What is geography's distinctive contribution to education?" That modern college geography is more than description and is more than a 'science of distributions' is pretty generally agreed in America. On the physical side its basic subject matter includes, of course, an interpretative account of natural features of the earth's surface, its climates, and its resources considered as the natural environment of life, especially of human life. On the social side, it is concerned with the ways in which man in various stages of culture and in various circumstances utilizes his natural environments, the industries that he develops, the national areas that he carves out and governs, the means of communication that he establishes, and other similar matters concerned with the earth as the home of man.

What our colleagues in other fields of knowledge want to know is: "What does geography contribute to the educational equipment of a cultured man that he does not get from other branches? Is the contribution made by geography a significant one or is it just one more study? Does it give a characteristic and distinctive view of the nature

¹Shrode, Ida May. *Jour. of Geog.*, 28:1929, p. 189-201.

of the world and of man? Has it a philosophy and a point of view of its own? Does it contribute to insight as well as to knowledge?" Our answer is promptly and unqualifiedly, "Yes, modern scientific geography does have a distinctive point of view and a philosophy of its own, and it does contribute to insight as well as to knowledge."¹

The relations of men with other men are social relations—political, economic, and sociological—and they belong mainly to the realm of the purely social studies. The interrelations between men and their earth environments are geographical relations, the concern of geographical science, whose roots are in the earth sciences and whose trunk and branches reach into the social studies. In recent years the social studies have won a wide popularity. The study of the outstanding achievements of men always appeals to the imagination and to man's proneness to hero worship. Time throws a mantle of romance about great men. We naturally delight in the exaltation of our own species, and so those phases of learning that stress man and his works get a ready hearing. Doubtless it is inevitable that the social studies should make a stronger appeal to people at large than does a science like geography, which, in its very nature, detracts somewhat from human glory and responsibility by holding that factors of the geographical environment, as well as the human will, play a significant part in the great drama of history.

In continental universities geography is usually associated with history, and appears to be cordially regarded by the historians.² In America, geography seems to have been viewed by some historians as an intruder, teaching a philosophy that might detract from the doctrine of the freedom of the human will and the glory of man and his unconquerable soul. It is my observation that the most extravagant claims for geographical determinism in human affairs, however, have been made not by geographers but by others, especially the historians Buckle and Taine, and the philosopher, Montesquieu. Admittedly man is, in a high degree, a free agent, but he is also an intelligent agent, and he cannot fail to discern that using his intelligence rather

¹ See Barrows, H. H. "Geography as human ecology." *Annals of the Assoc. Am. Geog.*, 13:1923, 1-14.

² See Taggart, F. J. "Human geography, an opportunity for the university." *Jour. of Geog.*, 18:1919, 142-148. Also by the same author a chapter on "The Geographical Factor," in his book on the *Processes of History*, Yale Univ. Press, 1918.

than emphasizing his freedom gets him forward. And as he uses his intelligence, he has found that while he can, within certain limits, subjugate his geographical environment, yet, to a greater degree, he must adapt his major activities to that environment. The wise man takes advantage of nature's opportunities and works in harmony with his geographical surroundings. He produces his various food crops where they find congenial climate and favorable soil; he locates his mills and factories with careful respect to the sources of power and of raw materials and with respect to markets. He endeavors to locate his chief ports on good harbors, and to lay out his railways accordant with topography. Geographical conditions do not necessarily determine that he shall actually do this or that; what they do is to offer or withhold opportunity. They are permissive and directive, not mandatory.

III. THE GEOGRAPHIC POINT OF VIEW

What does it mean to view the world about us from a geographic point of view? It does not mean the displacing of other points of view by the geographical, but rather adding it to them. For example, the geographer sees in the age-long process of organic evolution the results of an unceasing struggle of living things to adjust and readjust themselves throughout the ages to a changing set of natural conditions. The habitats furnished by the earth have been forever changing; and organisms, through successive generations of their descendants, have been compelled ceaselessly to be readapted through natural selection to new conditions of climate, competition, food supply, and the like. The geographer here differs from the biologist only in his point of view. He sees the endless procession of geographic or geologic changes as the impelling stimuli that have both conditioned natural selection and have constantly varied those characteristics that possessed survival value. In short, evolution has been a constant readjustment of organisms to geographic environments that were themselves changing. That is a geographical point of view of evolution.

Again, the geographer believes that he sees in the races of mankind aggregates of people who, in the formative period of human society or perhaps prehuman society, came under the influence of distinctive natural environments, especially different climates, subsisting on different foods, requiring different clothing and shelters, and, like other animals, adapting themselves to natural conditions. That races

of mankind do thus represent responses to different surroundings is a possible and perhaps a probable explanation of the differentiation of races.

The influence of the natural environment upon the religious concepts of peoples in the early and middle stages of civilization is another example. Mohammed's description of paradise, his promised rewards and punishments, and many of his specific teachings reflect the desert origin of Mohammedanism. The ancient Norse mythology equally reflects the cold and barren lands of the North. Norse mythology is as true to its environment as is that of the Persian or the Arab. It could scarcely be otherwise. A people's way of thinking must be influenced by the beauty and grandeur or hardships or mystery of their physical surroundings.

One more example: Man has made marvelous progress in the material aspects of civilization. He has made from the materials supplied by the earth a host of things that make life richer, more comfortable, more efficient, and more productive. The greatest of all his material achievements have been made in a short period of the immediate past and made chiefly through the use of two earth materials, rare in the ancient centers of culture and abundant mainly in the lands enclosing the North Atlantic basin. Those materials are coal and iron. Our present western civilization could never have developed in Egypt or Mesopotamia, in Crete, Greece, or Italy. Those lands are poor in fuel and metals. So long as our present western type of culture continues, the location of the great sources of coal and iron must determine the approximate location of the centers of world power. What man does depends much upon what he had to do with—that is, it depends much upon the things which are available. No one can doubt, for example, that the economic development of the whole of South America will be retarded and the course of its history constantly modified by the serious shortage of coal in that continent. No one can question that the lack of iron ores in Japan makes for Japanese aggressiveness toward any neighbors that possess those essential ores, and contributes to war danger in the Far East. The iron ores of Lorraine, the nitrates of Atacama, the petroleum of the Near East, the gold and diamonds of South Africa, and other instances of valuable mineral resources need only to be mentioned to suggest how largely the geographical location of such minerals has influenced and may influence the course of important events, including peace or war. Wars com-

monly have their roots in economic causes; among them is the desire of nations to hold or control those places in the world that are richly endowed or are of strategic importance, both of which are geographical matters.

IV. THE PRACTICAL AND CULTURAL VALUE OF GEOGRAPHY

The subject matter of geography is a rich and valuable body of knowledge—not of the location of capes and useless rivers and obscure towns, not of mechanically learned boundaries and latitudes and exports. Emphasis upon such items belongs to a past period of elementary education, now, we hope, nearly outgrown. But educated people are concerned with the location of countries and cities and peoples and resources of actual and world-wide significance. Everybody with any breadth of outlook is interested in the struggles in China, in Mexico, in India, in Russia, and in the events occurring in a score of other lands that constitute the modern world. The wide circulation of the *National Geographic Magazine* among persons of every calling is due not alone to its excellent pictures, but also to the inherent interest of mankind in the peoples and countries and customs and occupations found in other parts of the world. It is reported that Americans normally spend nearly a billion dollars in travel each year. Foreign travel is one kind of laboratory work in geography, and it would yield far richer results to travelers if they took more knowledge of geography with them.

If courses in geography had no other result than increasing man's knowledge of other peoples and regions, the study would justify a place in a college curriculum. But the science does much more than this. The student of scientific geography comes to understand that not only the time *when* he lives, but also the place *where* he lives, exerts its influence upon him and upon his doings.

V. THE CONTRIBUTION OF GEOGRAPHY

A knowledge of the geographical distribution of the world's great food-producing regions, iron-ore deposits, coal and oil fields, and sources of such economic raw materials as rubber, potash, manganese, chromium, copper, and nitrate, contributes to the educational equipment of the student of history, of economics, and of political science, just as a study of these subjects contributes to the equipment of the serious student of geography.

Too often history is taught as if it were made by acts of parliament, or by rivalries of rulers, or by other purely human acts. Yet no one questions the sequential relations of warm climate in the South, cotton-growing, negro slavery, and the War of Secession. No one questions the importance of the geographical position of Korea and Manchuria in bringing on the Russo-Japanese War; or the location of Cuba in bringing on the Spanish-American War. Going further back in history, it was the Nile with its remarkably dependable habits that gave a unique and distinctive character to ancient Egypt, the mother of our western culture. Important factors in the backward-looking Chinese philosophy, a cause of that country's long stagnation, are the great geographic barriers that effectively shut China off from contact with western civilizations.

There are definite geographical (including climatic) reasons for the rapid progress of Europe and the backwardness of Africa, for the swift economic development of the United States and the slower development of Canada and Australia, occupied by similar peoples. The growth of every great modern city is in part dependent upon its geographic location. The high industrial development of Belgium as contrasted with its neighbor, Holland, is partly a matter of the presence of mineral wealth in Belgium and its absence in Holland. The list of examples need not be extended, for few will question the influences of geographic factors in affecting the economic trends in a country during a given period. But the trend is very different in different periods of history.

An important contribution made by scientific geography to that breadth of view which the educated person seeks lies in its influence upon his way of thinking. He comes to see in human history and social evolution, not only the whims of rulers, the intrigues of diplomats, and the ambitions of kings, but also the influence of those natural factors which are summarized in the term 'geographical environment.' He comes to realize that, while man is the active, intelligent, aggressive member of the partnership, yet what man does is limited by what he has to do with, by the stimulating or depressing climate that enwraps him, and by his relative ease or difficulty of contact with others.

And so it comes about that if students of the social sciences in our higher institutions are to get a liberal education, they need to understand the historical point of view, and get it from the historian;

the sociological point of view, and get it from the sociologist; the economic point of view, from the economist; and the geographical point of view, from the geographer.¹ Every one of these specialists sees the world through his own window. The specialist's view is partial and possibly biased, but only he is competent to reveal to students that aspect of human knowledge which his specialty represents. Geographers would not hold that their science is more significant than others; it is less significant than some. But modern geography has a contribution to make that is essential to a broad view of world affairs. Obviously, it will not be the claims that we make for our science that determine its standing, but the merit of the actual work that is done, and the soundness and value of the content that is given to the subject.

VI. GEOGRAPHIC RESEARCH

While the purpose of this paper is to deal with geography in the curricula of collegiate institutions, a few words ought to be said about the contributions to knowledge made by the geographic research carried on by professors and advanced students of geography.

Some of the most fundamental researches are done in this country by the United States Geological Survey, the United States Department of Agriculture, and certain other governmental agencies and by the American and the National Geographic Societies. The research series of monographs issued by the American Geographical Society already numbers thirteen or more.

Most numerous of the studies carried on by university workers are regional investigations that are going forward in increasing numbers both at home and abroad. These include reconnaissance and intensive studies in South America already made by ten or twelve American professors of geography. Similar investigations have been carried on in Asia by several professors, a smaller number in Europe, and scores of regional, urban, and other studies in North America.

In the intensive regional and urban studies a technique of field work and mapping is being developed. Candidates for the doctor's degree in geography are being trained in this technique and their doctoral dissertations are increasingly based upon these intensive regional studies.

¹ See Fenneman, N. M. "The circumference of geography." *Annals of the Assoc. of Am. Geog.*, 9:1919, 3-11.

The six American geographical magazines are inadequate to provide outlets for the growing stream of papers that seek publication. The meeting of the Association of American Geographers in 1931, for the first time in its history, had to run parallel sections and the majority of its papers had to do with research projects.

Even from this brief survey it is evident that American geographers are pushing research and writing as well as expanding their college and university departments.

VII. CONCLUSIONS

What, in conclusion, is the place of geography in higher education? First, it is to present a body of special and accurate geographical knowledge, which is an integral part of the equipment for citizenship. Second, it is to contribute a geographical background for the study of history, economics, anthropology, and other social sciences. Third, it is to give a point of view and a philosophy that recognizes that the evolution of life and society has ever been conditioned by the elements of the natural environment in which the evolution took place. No appraisal of the nature of the world and of man can be adequate that does not recognize the geographic factor among those factors that control human history. Fourth, a highly important function of geographical education is training in field methods, cartography, and effective geographical writing.

CHAPTER IV

GEOGRAPHIC SURVEYS OF RURAL AND URBAN AREAS

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The earlier surveys of both rural and urban cultural landscapes published by American geographers were for the most part doctoral dissertations. They were generally reconnaissance studies of rather large areas, projects too ambitious to be covered in detail by a single individual in a limited period of time, and they varied greatly in character, this variability resulting from differences in the interests of the individuals making the surveys and those of the groups of geographers supervising the studies.¹

In most institutions geography developed as an offshoot of geology and many of the earlier surveys reflect that fact; in others, the interest of an individual member of a department prompted studies more distinctly related to history.² In addition to the great diversity of center of interest in these earlier surveys, no acceptable or accepted techniques in either field work or method of presentation had been developed, so that the studies varied greatly, not only in objectives, but in method of attack and presentation as well.

With the accumulation of experience, this considerable diversity decreased by degrees as each new study served to demonstrate the advantages of certain types of procedure. Reconnaissance surveys were succeeded by more detailed work in rather limited areas,³ and experimentation led to the development of definite techniques in field work⁴

¹Sauer, C. O. *The Geography of the Ozark Highlands of Missouri*. University of Chicago Press: 1920.

Davis, D. H. *The Geography of the Jackson Purchase*. Kentucky State Geological Survey, Series VI, Vol. 9, 1923.

²Parkins, A. E. *Historical Geography of Detroit*. Michigan Historical Commission: 1918.

³Trewartha, G. T. "A geographic study in Shizuoka Prefecture, Japan." *Annals of the Assoc. of Am. Geog.*, 18:1928, 127-259.

⁴Jones, W. D., and Finch, V. C. "Detailed field mapping in the study of an agricultural area." *Annals of the Assoc. of Am. Geog.*, 15:1925, pp. 148-157.

Jones, W. D. "Ratio and isopleth maps in regional investigations of agricultural land occupancy." *Annals of the Assoc. of Am. Geog.*, 20:1930, 177-195.

and presentation, so that to-day most rural and urban studies follow somewhat similar lines.

In some of the earlier surveys, and even in some geographic writings of comparatively recent date, the most obvious if not the only objective has been the demonstration of environmental control of human destiny. This earlier undue emphasis on demonstration of a theory as an objective and the too frequent acceptance of the theory as the definition of the subject or the field of inquiry were unfortunate.

It is generally conceded by geographers that the environment constitutes a limiting factor in determining the range of man's effective choice of activity, that a given environment is subject to change both in actual and in relative value, that the value of a given environment varies with the stage of development of a population group, and that man himself is an agent in modifying the environment and its value in addition to having his activities limited concurrently by it.

It is even highly probable that an effective classification of landscapes in terms of sequence of occupancy could be evolved that would both clarify and simplify our concept of the world as the home of man. To secure maximal effectiveness in our appreciation of the present utilization and the possibilities of a given region, both present and sequent occupancy must be considered. This fact has been recognized in some of our more recent field surveys, even those of reconnaissance character.¹ It is assumed that the Pioneer Belt studies sponsored by the Social Science Research Council will be of this type.

Paralleling these changes with the development of altered concepts of the field of the subject, new types of unit areas have been selected for study. Since geography developed in geology departments and was taught by men who were primarily geologists—or at best geographers with a major preparation in geology—it was natural that the earlier geographic surveys were of areas that were geologic, but not necessarily geographic, units. In addition, the disciples of the doctrine of environmental determinism, firmly intrenched and in control of the field, viewed the similar or uniform conditions of the geologic unit as a neces-

¹Schmieder, O. *The East Bolivian Andes South of the Rio Grande or Guapay*. Univ. of Cal. Pub. in Geog., Vol. 2, No. 5, 1926.

Leighly, J. B. *The Towns of Mälardalen in Sweden, a Study in Urban Morphology*. Univ. of Cal. Pub. in Geog., Vol. 3, No. 1, 1928.

Thomas, L. F. "The sequence of areal occupancy in a section of St. Louis, Missouri." *Annals of the Assoc. of Am. Geog.*, 21:1931, 75-90.

sary determinant of the human activities therein, which thereby insured geographic unity to the geologic area. In some of both the earlier and the later studies, political limits have determined the area.¹ More recently cultural regions have served as units, as it has become increasingly evident that, if geography is concerned with the cultural landscape, the unit for study should be a unit of landscape,² not an area outlined by more or less arbitrarily drawn lines or even by geological formations.³

Our greatest advances in rural and urban studies have been in the development of effective techniques for work in definite types of studies. Geography deals with places, many with highly complex environmental settings, and equally or even more complex cultural conditions. To portray these facts of area on a single map or series of maps, not too difficult of easy interpretation, has been one of the goals of geographers working on rural and urban surveys and at the present time fairly satisfactory maps of such character have been evolved.⁴ It has been found possible not only to picture the cultural landscape as a plane surface but also to 'contour' types of human activities as they increase or decrease at varying levels.⁵

In addition to these significant developments in technique, there has been a great increase in the number of studies of small areas and of geographic studies of a single aspect of the landscape, as of a single industry or group of related industries.⁶ This last type of study constitutes at least a tentative recognition of the impossibility of a single

¹ Finch, V. C. "Culture and Landscape at Madison, Wisconsin." (Abstract only.) *Annals of the Assoc. of Am. Geog.*, 16:1926, 25.

Whitbeck, R. H. "The Chileans and their geographic environment." *Annals of the Assoc. of Am. Geog.*, 19:1929, 149-165.

² The term 'landscape' is used in this chapter in a technical sense. It may be defined, following Carl O. Sauer in his "The Morphology of Landscape," as "an area made up of a distinct association of forms, both physical and cultural." —A. E. P.

³ Platt, R. S. "A detail of regional geography—Ellison Bay Community as an industrial organism." *Annals of the Assoc. of Am. Geog.*, 18:1928, 81-126.

⁴ Whittlesey, D. S. "Field maps for the geography of an agricultural area." *Annals of the Assoc. of Am. Geog.*, 15:1925, 187-191.

⁵ Parkins, A. E. "Profiles of the retail business section of Nashville, Tennessee." *Annals of the Assoc. of Am. Geog.*, 20:1930, 164-175.

⁶ Baker, O. E. "Agricultural regions of North America." *Economic Geography*, (in various issues 1926 to 1932).

Brown, R. M. "Cotton manufacturing, North and South." *Economic Geography*, 4:1928, 74-87.

individual's coping successfully with the highly involved problems presented by the complex structure of a great modern city with its great diversification of activities.

Increasing recognition is being accorded to the necessity for constructive planning for the future. This necessity is recognized by the better informed individuals of every community, by the more progressive of the larger business organizations, and by the more enlightened communities. Such recognition is evidenced by the series of Regional Geographic Surveys of the State of Kentucky,¹ "Economic Land Surveys,"² "City Surveys,"³ "Planning Commission Surveys,"⁴ and "Trade Surveys" of the United States Department of Commerce,⁵ and the studies being conducted independently by many of our larger business firms. These studies are all largely geographic in character; geographers have participated in some, as the Chicago River Bridge Survey; others, as the Resources Survey of Cincinnati, have been supervised by geographers who have also done important work in connection with the survey; and geographers have been asked to undertake still others.

For studies of this type the geographer is well equipped, as such surveys are essentially studies of landscape. Surveys of single aspects of human occupation, particularly of the organization of activities normally without definite areal expression, may be carried on to better advantage by specialists in the particular field involved; but the description of the features of the natural landscape, of those material features that are the product of its human occupation, and the explanation, if possible, of the forms, patterns, associations, and functions resulting from human occupation and use of the natural area constitute the peculiar field of the geographer.

The geographer integrates the facts of the landscape into an understandable pattern, presents these facts on maps or other types of graphic representation, and interprets, in so far as possible, the facts portrayed. These have been the major contributions of the geographer in all surveys in which he has participated or that he has directed; in all such studies with which geographers have not been associated, the

¹ Davis, D. H., Sauer, C. O., and others. *Geographical Studies of Kentucky*. Kentucky Geological Survey, 1923-1927.

² *Michigan Land Economic Survey*.

³ Fenneman, N. M. *Resources Survey of the Commercial Club of Cincinnati* (Abstract), 1927.

⁴ *Chicago River Bridge Survey by the City of Chicago*, 1925.

⁵ *Commercial Survey of the Southeast*. Dom. Comm. Ser. No. 19, 1927.

element of integration is lacking, either completely or to an extent that detracts materially from the value and utility of the results.

This statement of acts is not an argument for the necessity of economic justification for such studies by geographers, but is intended to show that increasing numbers of non-geographers are realizing the importance such studies may have in making possible the evaluation of the opportunities of an area and in enabling intelligent planning for the future, so that natural advantages may function more fully and effectively in furthering the economic and social welfare of a given community.

Geographic surveys, both rural and urban,¹ have distinct value in enabling us to visualize the earth, our home, and in making it possible to plan our activities more intelligently. They profit us in both an intellectual and a material way. They have altered in scope and character and their value has increased as a fuller understanding of their possibilities has become apparent. The future should witness a great increase in the number and value of such studies.

¹ It hardly needs to be said that no attempt has been made in this chapter to list all published rural and urban surveys; those mentioned have been chosen merely as illustrations of the various types of studies that have appeared.

CHAPTER V

USES OF GEOGRAPHY AS EXEMPLIFIED IN COMMERCE AND INDUSTRY

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A short time ago a sales manager in New York cabled his agent, then in the Philippines, to run over to Porto Rico before his return. It was the manager's idea that the two island markets, which he believed were in close proximity, should be served by one representative. But faulty geographic conceptions are not limited to the knowledge concerning foreign countries. There is the familiar story of the Texas salesman of a Chicago manufacturer, who was in El Paso when he received a telegram from his chief: "Please proceed to Texarkana to adjust claim of Blank Company." The Chicago sales manager was distinctly surprised to receive the answer: "Why don't you send a Chicago man? You are sixty-five miles nearer Texarkana than I am."¹ The sales manager got a new lesson in place geography as well as a better idea of the size of Texas.

Attempts to market products in unfavorable localities because of lack of knowledge of climate or of activities of the people are familiar to all. Many business men seemingly refuse to consider seriously either locations or types of occupations in other areas than their own.

We might ask ourselves the question, then, "Do business men use geography?" If so, teachers should make more effort to have pupils realize that a knowledge of geography not only may lead to a fuller enjoyment of life, but, if properly used, may also be of great advantage in making a living.

Although adults make use of geographic information in many different walks of life, we are here concerned only with some of the ways in which they use geography in carrying on their activities in commerce and industry.

¹ Eastman, R. O. *Marketing Geography*. (Alexander Hamilton Institute, New York, 1930), p. 28.

Industries may be classified as extractive, conversion, distributive, and public service. Since we are here using the term 'industry' in a restricted sense, extractive occupations, as agriculture, lumbering, mining, and fishing, while dependent on geographic conditions of fundamental importance, are not discussed in this chapter. Neither will we here examine the factors that have to do with the public service industries, which do not produce or handle concrete articles. Included in this group, in addition to the governmental activities, are such private enterprises as banking, insurance, and many other agents of public service.

There remains for us to consider the two great industries that engage the time and energy of men in *conversion* and *distribution*. Only a small proportion of the products of land, water, forest, and mine are ready, in their natural state, for the use of the people, especially in a highly progressive society. These products must be changed, fabricated, or manufactured—'converted'—before they are ready as commodities for use or as products of commerce. Examples of this conversion are familiar to all. In most cases more than one change is necessary before the raw product becomes a commodity ready for the table, for clothing, or for use as a tool. Wheat goes from the field to the mill and the flour from the mill to the baker. Fruit may go almost directly into the can, but the can is made of material from mines of different ores and each has gone through several processes before the container is complete. The log and the hide—the latter itself a by-product—pass through a greater or lesser number of phases of manufacture, depending on the commodity desired.

If a man is desirous of entering the conversion phase of industry, the first question that he must confront is, "Where shall the factory be located?" The present-day locations and distribution of manufacturing industries are largely adjustments to what may be termed 'location factors.'

These—labor, market, power, and raw material¹—have relentlessly played their part in the success or failure of endeavor. They may be likened to four forces, often pulling in four different directions, the

¹It may be suggested that we have left out one of the major factors of industry, that of capital. We have refrained from discussing this important item here, for, given the other conditions favorable, capital is easily induced to move into almost any area, especially if political and governmental conditions are stable and the attitude of the people of the area is friendly.

factory, proposed or completed, being the object on which the various forces are exerted. Changing conditions, such as change of power or improvement of transportation, may increase the importance of one factor in relation to another, but the four are always exerting an influence on the attempts of man to adjust his operations to natural conditions.

The relative importance of any one of these major factors depends usually on the type of product to be made. A few examples will be given to indicate their effect. American pottery manufacture has developed at Trenton, New Jersey, and East Liverpool, Ohio. Much of the pottery made at these places demands exceptional skill on the part of the workers. Therefore, new factories are established at these two places, although the raw materials come from many scattered areas and the product is distributed even more widely. Bulky products of small value are likely to be produced near the market. For example, cheap furniture is made in or near almost every large city. However, high-grade furniture is likely to be made in localized centers where there is a supply of skilled workers and long established markets. Cement plants not only need to be near raw materials but also near fuel. Power is the important element in the location of abrasive and chemical plants and hence many, when there was little developed hydro-electric power in our country, were located near the plentiful and cheap supply of electricity in the vicinity of Niagara Falls.

Not always, however, does man locate his plant in accordance with these major factors. The beginning of the brass industry in the Naugatuck Valley or the tire industry at Akron can hardly be ascribed to any of these major factors. Location may be mere accident or convenience in a period when competition is weak. Once having started in these areas, the advantages of labor supply have attracted others, and hence growth has continued.

From what has been said above it is evident that problems of production, or conversion, and problems of distribution are intimately related to each other and to geographic conditions. It is also true that the problem of finding a market for commodities involves some geographic background. It has been said that "Markets are people—human beings with pronounced tastes and long-standing habits, on the one hand, and highly variable impulses, on the other." But habits and customs are rarely the result of mere accident. They rather are the consequence of an economic life founded for the most part on

natural resources and climatic factors of the local environment. Some of these, especially the resources, may take on a new relationship with changing types of transportation and development of centers of population, but those pertaining to climate are likely to remain rather constant. New Orleans will probably always be a better per capita market for straw hats than Quebec. It is to be expected, then, that we find the distributors making geographic contacts, as well as the producers, for there are characteristic differences peculiar to each area or market and these variations occur with topography, climate, resources, and the activities of the people.

If markets are people, then those who supply those markets must know the desires of the people and why they have such desires. The wide-awake salesman has long known the importance of studying local geographic conditions. Happy is he if he can convince his superiors that there is a difference between the wants of the people of Superior, Wisconsin, and those of Savannah, Georgia. If a sales manager is successful, he must know where he is getting his business, from whom he is getting it, why he is getting it, and where there are probable chances of getting more. The same or similar knowledge may also give him the key to business losses. Many of the facts that he wishes to secure are geographic facts, but many business executives are just beginning to realize the significance of geographic facts and principles. Some of the executives have just begun to learn that the merchant or salesman who knows the geographic conditions in the region in which he operates has a big advantage over competitors who have paid no attention to these conditions or have lacked the means of obtaining knowledge of them.

With the realization that geographic knowledge is important in business has come about a more intelligent use of this knowledge in market research. Take, for instance, the more intelligent use of maps by sales managers and other executives. While these men do not always make the best possible use of their maps—in most cases the map shows only political divisions and locations of rivers, cities, and transportation routes—still a growing number of men recognize the value of maps that show relief and portray rainfall and vegetation.

The relation of topography, climate, and natural resources to potential market is obvious. These find their reflection generally as a complex in the density of population. The population map, therefore, measures, in a large way, the opportunities for sales; thinly

peopled Nevada offers far fewer opportunities than moderately settled Ohio. There are very few articles of trade whose sales are not affected by climate. It is known to all that as one moves from North to South different types of clothing, food, housing, and other living requirements are evident; but there are other differences, not so easily discernible, that are often overlooked. For example, weather conditions affect the activity of factory employees and hence there are ups and down in production. Baking companies have discovered that the consumption of sweet cakes varies with the weather—sales go up in cool weather and down in warmer weather. From this observation the companies are able to forecast their cake-baking by making a study of the weather reports. Many other examples of benefits derived from research in applied geography could be cited.

Governmental agencies, as the Department of Commerce, writers of marketing books and trade journals, local chambers of commerce, and kindred organizations are all making use of geography in their researches and publications. If we examine the working outline of their surveys, we are impressed by the large number of geographic factors that we recognize as essential.

Practically every city in the United States has recently made some sort of study to show its advantages as an industrial and marketing center. Some of these studies are superficial and somewhat bombastic, but many are serious, painstaking surveys, and in all of them one or more favorable factors of geographic location are proclaimed. Witness the slogan of Columbus, Ohio: "The Heart of a Great State" or that of Chicago: "The Cross Roads of the Continent." The *Saturday Evening Post* of September 19, 1931, has a full page of advertisement, with map and picture, calling attention to "The Port of Philadelphia Plus the Panama Canal."

Trained geographers have gone into nearly all fields of public and private enterprise. Hundreds of examples could be enumerated to show the uses of geography, both in general and in detail, by adults. We believe that enough has been given, however, to call attention of teacher and pupil to the value of geography not only as an aid to better enjoyment of living and more intimate knowledge of other peoples, but also as a means to better business.

CHAPTER VI

THE PLACE OF GEOGRAPHY IN THE ACTIVITIES OF THE GOVERNMENT

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Two quotations, the one from the writings of J. F. Dewhurst, the other from those of Jean Brunhes, will serve well to introduce this aspect of the uses of geography.

The scientist and the research worker have displaced the explorer and the prospector; discovery has been transferred from the frontier to the laboratory. . . . That this continued rapid advance in the technology of production and distribution . . . has borne rich fruits in human well-being is quite apparent without the evidence offered by statistics. Not so widely recognized, perhaps, is the fact that the continuing Industrial Revolution is creating a multitude of new social and economic problems which demand for their solution the application of the same scientific methods which resulted in their creation. . . . Inasmuch as our modern commercial organization has been so largely instrumental in the creation of these new problems, it is peculiarly the responsibility of business enterprise to share in their solution to help in doing 'a better job of it.' Business now occupies a position of dominant and pervasive power, and hence of enormous responsibility in modern life, especially in the United States where the commercialization of human activities has progressed further than at any other time in the history of the world. . . . Instruction in the basic sciences underlying human and economic relations . . . is generally believed to be essential in business training, just as instruction in physics, chemistry, and mathematics is essential to an engineering profession.¹

Because man lives upon the earth, he depends upon the earth. . . . The essential thing for men is then to know exactly the real nature of the natural conditions which surround their lives and to know always with what precise geographical facts they will have to cope. The genius of humanity adapts itself with rare versatility to the most dissimilar facts. . . . Thus everything on the surface of the

¹J. H. S. Bossard and J. F. Dewhurst. *University Education for Business* (University of Pennsylvania Press, Philadelphia, 1931).

globe is for men a matter of habit, of sound understanding of physical facts, and of skillful adaptation to these facts. Moreover, the adaptation must take place promptly and at the right time—preceded, prepared for, and brought about by exact scientific investigations.

These investigations should also tend to moderate our ambitions, to turn us away sometimes from undertakings that would mean such bold opposition to the forces of nature that man would run the risk of seeing sooner or later his patient work annihilated at a single stroke. . . .

Space, distance, and difference of level become in fact geographic values, because men conquer them and make them serve their needs. Now, how does this domination show itself if not—once more and always—by the building of factories and fortresses, of roads and canals, or of railroad stations, by the creation and maintenance of fields and gardens, of transport animals or herds, by the exploitation of the natural vegetal carpet or of mineral riches? Space, distance, difference of level are conditions and factors of human work and settlement; let us never confound them with the forms of this work, with the material marks of this settlement. They are means more or less propitious or contrary to life, wealth, or power.¹

Because of the fundamental and pervasive character of the geographic element in human affairs, fostering success when recognized and utilized, and failure when misunderstood and ignored, geography occupies a position of prime importance in education and in the conduct of human affairs.

Because of its vital significance and position among the sciences, it has its place on a par with other sciences in the scientific enterprises of the National Research Council. Also the National Academy of Science includes among its members several men who are eminent in geography, and who were elected because of that eminence.

Geography, like other sciences, covers different fields of research and application, practically all of which are represented in government and commercial activities, and which include both specialized and incidental application of geographic principles and technique. Because physical factors are to greater or lesser degree woven into essentially every human activity, they are being studied for themselves and in relation to human affairs. The physical geographer develops laws and principles in meteorology, climatology, physiography, soil science, and oceanography. These in turn become the tools of the human

¹ Jean Brunhes. *Human Geography* (Am. Ed., Rand McNally & Co., 1920).

geographer. He analyzes relationship between them and present and proposed human enterprises, or plans to utilize in commercial, industrial, social, or other projects the advantages presented by them, and to avoid obstacles, errors, or even failure because he develops his plans in harmony with the principles of geographic relationship. His is a conscious directivity, steering a course over a solid highway reinforced by laying down and interweaving a strong intelligently selected subsurface of physical factors on which, other things being equal, his business may travel safely and successfully.

Geographic relationships are inherent and fundamental in the location and expansion of manufacturing industries, industrial regions, commercial centers, and commercial regions. For carrying on and promoting domestic distribution and foreign trade, they are basic and potent forces. Financial centers and political entities are not free from their formative influence. They help lay the course of trade routes. The film of people over the earth thickens, thins, or disappears depending on physical conditions, and finally the economic significance of nations and the lines along which they may develop permanently and most profitably have their roots and ultimate limitations in physical conditions. The geographer is the engineer who knows upon what hidden piles and caissons the political, economic, or social structure is or should be raised, and who suggests utilization, adaptation, or adjustment to these physical conditions.

Many profoundly significant studies in physical geography are being made in the Weather Bureau; the Soil Survey; the Geological Survey; the Biological Survey and the Bureau of Plant Industry; the Hydrographic Office of the Navy; the Army Engineers; the Air Corps of the Army and Navy, respectively; the Coast and Geodetic Survey; the Forest Service; the General Land Office; the Aeronautics Branch of the Department of Commerce; the Bureau of Mines; the Bureau of Fisheries; the Bureau of Public Roads; the Reclamation Service; and the National Park Service.

These organizations are accumulating source material regarding the atmosphere, climate, water supply and drainage, land surface and mineral resources, forests, ocean bottoms and shore lines, rivers, harbors, and lakes, and soil fertility. So vast and far reaching are these activities that only the government can adequately care for them.

Equally significant are the scientific services rendered by the government in the field of human geography. Four branches of the gov-

ernment employ professionally trained geographers, each working on his own distinct phases of human geography: the Bureau of the Census; the Department of State; the Bureau of Agricultural Economics; and the Bureau of Foreign and Domestic Commerce. In addition are such men as the Chief of the Soil Survey and a former chief of the Bureau of Plant Industry, one a soil scientist of international standing, the other an ecologist of like rank, but both also leaders in the field of human geography.

The Geographer of the Census serves the country in many ways. He is the one who prepares maps for the volumes of the Census. This requires careful studying of census statistics, as they may express facts about population, manufacturing, agriculture, or distribution. While the Census is being taken and compiled, the work requires a large staff of workers, some of whom remain permanently to carry on the regular activities of the Geographic Division of which the Geographer of the Census is Chief.

Studies are made along such lines as population and agriculture, sometimes in coöperation with other divisions of the Census or Bureaus in the Government. The county and township maps of the United States must be kept up to date, and this is not so easy a task as it may sound. Some boundaries of these and other civil divisions are changed at some place in the country every year, and the Census must keep its maps correct, for business enterprises of many kinds, engineers, and others require correct maps and depend upon the Census to provide them.

The development of cities and metropolitan communities has been recognized as a factor in American life, but not until the 1930 Census had the entire area and population of these urban agglomerations been completely measured. The interrelated unit is connected with a central city or cities. Previous censuses have limited a metropolitan area to the territory within ten miles of the political limits of the central city. The 1930 Census measures the metropolitan area of urban groups where the population of the central city is 50,000 or more, and includes all surrounding territory having a population density of 150 to the square mile, and areas of less density surrounded by those of the prescribed density. The monograph of the 1930 Census on Metropolitan Districts, their population and area, was prepared under the direction of the Geographer of the Census, and statistically analyzes the age, sex, nationality, and distribution of population within

the metropolitan group. This, together with other census data covering such subjects as agriculture, population, manufactures, and distribution, provides valuable material for geographic study.

Quite different in character is the geographic work in the Department of State. There the Office of the Geographer deals with the geographic aspects of political problems. The geography of disputed boundaries is analyzed in detail for the information of American representatives on boundary-adjustment commissions or others. Even such remote regions as the Arctic and Antarctic may require geographic regional study in connection with territorial claims of various nations. The different possible definitions of territorial waters claim attention, in the endeavor to arrive at an international agreement as to their limit. Immigration quotas also may bring geographical problems to this same office, for it may be necessary to determine the immigrant's country of origin according to political boundaries which have changed more than once in the course of sixty or seventy years. Obviously a geographer is a necessary adjunct to international diplomacy.

Agriculture is so clearly dependent upon physical environment that geographers long have been recognized in this field and contributions from the agricultural geographer in the Bureau of Agricultural Economics have been fundamentally important. One of the earliest was *Geography of World Agriculture*,¹ which presented by the dot method the distribution of crops throughout the world. It has been reprinted more than once by the Superintendent of Documents at Washington in response to insistent demand. Important studies on wheat, corn, meat, and land utilization have appeared in the *Agriculture Yearbook* from time to time. The *Atlas of American Agriculture*, prepared through coöperation between different bureaus in the Department of Agriculture is preëminently geographic in character. Its sections on "Cotton," "Rural Population," "Precipitation," and "Temperature" are outstanding contributions to the geography of the United States.

From these studies also have emerged articles on the agricultural regions of North America, and on land utilization and food supply, and important studies on population.

The Geographic Section of the Bureau of Foreign and Domestic Commerce is rendering geographic services to American business. The geographer in this Bureau is therefore in a field quite distinct from that

¹ V. C. Finch and O. E. Baker. *Geography of World Agriculture*.

of the other geographers, dealing with entirely different problems, involving coördination and application of geographic relationships unlike those of agriculture or diplomacy.

Although geographic laws are basic in essentially every commercial, industrial, and business undertaking, their relationship was not understood until it was analyzed and synthesized by the modern science of human geography. It then remained for this Geographic Section to make the practical application, and this service was placed at the disposal of American business men, who are using it daily. Some have thus been able to avoid loss, because in the beginning they have known the relation of the complex physical background to their projects. Others whose products were not standing up in certain markets, changed the composition of their goods and overcame the difficulty. In other instances a firm desired to bid on construction work or to supply material, for an area with which it was unfamiliar. So, in response to their request, a report on the regional geography of the land concerned, as related to their particular project, was prepared for them. Each project generally requires its own correlation of physical conditions, for a report of great value to one enterprise may be useless to another, though dealing with the same area.

Then, again, the problem might be that of selling or manufacturing and involve the when, where, and regional importance and type of demand for a group of markets. In these the regional geography may also reveal reasonable expectance, other things being equal, of permanent or transient prosperity in the area, because it may be determined largely by such physical resources as climate, soil, topography, or location. Therefore an interpretation of the relation of these factors to present and potential human development provides one of the criteria upon which sales activities, manufacturing, and other enterprises may establish a sound program for development.

The geographic portions of the *Commercial Travelers' Guide to Latin America* and of some similar bureau publications were prepared by the Geographic Section, as were maps for the *Handbook of the United Kingdom* and some other reports.

The Geographic Section also represents the map publishers of the United States in the Bureau organization, and is coöperating with them in connection with their work of map compilation and production, and in promoting sales of their maps and atlases.

The work of the Geographic Section in the Bureau of Foreign and Domestic Commerce during the past eight years has revealed the important relation of geography and the professional geographer to commercial activities, including both production and distribution. The contribution of the geographer to these enterprises interprets the relation between coördinated physical elements and the commercial undertaking.

The work of these professionally trained geographers in the government, and of government bureaus, like the Coast and Geodetic Survey, the Weather Bureau, the Geological Survey, and the Forest Service, but serves to emphasize the significance of geography in human affairs. It reveals also the necessity for professional geographic training. A man or woman can handle such geographic problems as those of the Census, of agriculture, diplomacy, commerce, and industry only after training in geography. If geography is to be the tool of the business man, the exporter, the domestic distributor, or the statesman, he must know the science of geography, itself.

SECTION II
DEVELOPING THE SCIENCE OF TEACHING
GEOGRAPHY

GUIDE TO SECTION II

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CHAPTER VII

INVESTIGATING THE VALUE OF GEOGRAPHIC OFFERINGS

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INTRODUCTORY: PURPOSE OF SECTION II

Section II, consisting of Chapters VII, VIII, IX, and X, indicates the scope, variety, and complexity of the problems involved in developing the science of teaching geography. In the conviction that the core of any real science is a body of generalizations or principles that are established truths, not mere opinions, scientific investigation is stressed as essential in the sound solution of these problems. Accordingly, the development of the science of teaching geography is depicted in terms of investigative studies and of conclusions based thereon.

It does *not* follow from the establishment of principles of teaching geography that geographic subject matter becomes a fixed body of material to be presented in a fixed way; there always will be more ways than one of achieving a given outcome. Such principles merely afford standards for the evaluation of any proposed body of material and any proposed program of presenting material. The chief purpose of Section II is to show what progress has been made and what techniques have been employed in prosecuting investigations basic in the derivation of these standards.

I. GENERAL TECHNIQUE AND CRITERIA

One who has a scientific attitude in investigating the value of geography in child-training does not set up the theory that the subject is valuable and then search for facts that help to prove his idea. Instead, he takes an unbiased, impersonal view of the matter and searches for all facts that may throw light on the question.

It is evident that in solving the problem 'What is the truth about geography as an instrument in training children?', one must consider: (1) the goals of child-training, (2) what geography offers, (3) all available facts indicating that these offerings do or do not contribute

toward one or more of these goals, and (4) the exact nature of any contribution that may be evidenced.

Analysis of the findings of experts leads to the conclusion that it is the major objective of general education to help one develop the ability to cope effectively with problems of everyday living—vocational, avocational, social, economic, and civic problems. It matters little, as far as any value of geography in contributing to such a goal is concerned, that some conclusions reached by experts put the greater stress on developing the individual as an individual, while others put the emphasis to large extent on developing the individual as a member of society, for both emphases call, in essence, for the following attributes as elements in such development: (1) health and health-promoting habits, (2) esthetic appreciations, (3) such degree of skill of expression in manual and fine arts as is consistent with a given individual's tendencies and circumstances, (4) habits in conformity with high ethical standards, (5) command of fundamental tools of learning, and (6) ability to think sanely, on sound bases, concerning individual, social, economic, and civic problems. The acceptance of these as attributes that general education should be designed to develop seems warranted in an investigation of the value of geographic training.

II. THE NATURE OF GEOGRAPHIC OFFERINGS

1. Analyses Involved

To discover the truth about what geography offers is in itself a major problem. This problem involves two separate analyses of an enormous mass of geographic materials: one with a view to discovering *types of ideas* presented in it, and a second with a view to finding what *types of learning experiences* it affords. Examples of each type of analysis follow:

a. Discovering Types of Ideas Presented. In one of the current geography texts¹ the following statements and exercise concerned with the Hawaiian Islands are presented:

¹Brigham, A. P., and McFarlane, C. T. *Essentials of Geography, Second Book*. New York, 1916, pp. 193-5. These statements, though not numbered in the text, are here numbered to facilitate reference to them. Phrases omitted from the sentences quoted are those not needed in illustrating the procedure of this analysis and are omitted to save space.

1. The Hawaiian group consists of a chain of nine islands extending southeast and northwest in the North Pacific Ocean.
2. They are between 18° and 23° north latitude, or just south of the Tropic of Cancer . . .
3. The total area of the islands is considerably less than the area of Massachusetts . . .
4. Hawaii is the southeastern member of the group . . . ; it is over 70 miles across in any direction.
5. All the islands are volcanic . . .
6. The highest peaks are on Hawaii . . .
7. . . . on the east side of the mountain are the largest craters of active volcanoes in the world.
8. They are basins several hundred feet deep and two or three miles wide.
9. When the volcanoes are quiet, the floors of these craters are cooled in places, and hard enough to walk on, but they contain lakelets of spluttering lava.
10. At intervals of some years, the lava rises in the higher crater until it runs out of some break in the side of the mountain and flows slowly down the slope (Fig. 288 [Lava flow from a Hawaiian volcano]).
11. The islands are in the belt of the northeast trade winds, which blow over the Pacific the same as over the Atlantic Ocean.
12. Hence the northeastern slopes of the islands receive more rain than the southwestern parts.
13. The winters are wet and the summers dry, . . .
14. The islands were under native rulers until 1893, when a republic was established.
15. Five years later, they were annexed by the United States.
16. They now form the organized territory of Hawaii, with a legislature, and a delegate in Congress at Washington.
17. . . . by far the greatest product is cane sugar.
18. The islands are one of the chief sources of sugar for use in the United States.
19. There is a United States naval station for the coaling and repair of ships (at Honolulu).
20. The voyage across the Pacific Ocean takes about three weeks for fast steamers, and it would be difficult for a ship to carry all the coal needed for so long a voyage.

(Exercise) 1. Give the number, latitude, and area of the Hawaiian Islands. 2. Which is the largest of the group, and what is the distance across it? 3. Which island has active volcanoes? 4. Describe the craters and the manner of eruption. 5. In what respect does the rainfall resemble that of Porto Rico? 6. Give the important facts in the history of the islands. 7. What is the chief product? 8. What special value have these islands to the United States?

Examining these twenty statements in terms of the types of ideas presented in them, one notes that most of them give a reader *descriptive ideas*. They merely help one visualize the nature or location of specific features, such as islands, volcanoes, and coaling stations; of specific conditions, such as raininess or dryness; or of specific activities, such as coaling and governing in a given way. Statements 12 and 20, however, are more than descriptive. They present what may be termed *interpretive ideas*. The *hence* in Statement 12 implies that wind direction and slopes in these islands *help to explain* greater rainfall on northeastern slopes and less rainfall in the southwest. Statement 20 suggests that the great width of the Pacific is one *reason* why men have chosen to establish a coaling station at Honolulu. One can hardly fail, moreover, to get an interpretive idea from the mere juxtaposition of 17 and 18. Although not stated in terms of relationship, it is difficult to avoid seeing that the production of sugar cane in Hawaii *accounts in part* for the fact that the United States depends on these islands as one source of sugar supply.

The classification, on the foregoing basis, of the ideas presented in the twenty statements may be indicated as follows:

I. Descriptive ideas: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

II. Interpretive ideas: 12, 20, and (probably) 18.

The fact that 12, 20, and 18 present both descriptive and interpretive ideas suggests a subdivision of descriptive ideas. Obviously some of the descriptive ideas are introduced to serve as *elements of the interpretive ideas* presented. Others are of an *encyclopedic* nature, introduced much as are words in a dictionary. Just as words beginning with *a* are grouped together in a dictionary, so descriptive ideas having to do with Hawaii are grouped together, but each one is separate from all others, and constitutes, in so far as this treatment reveals, an end in itself, instead of an element in an interpretive idea.

Reëxamination of the descriptive ideas reveals another basis for subdivision. Islands, volcanoes, craters, and the like are *natural* features not made by man. Coaling stations, territorial government, sugar cane, and the like are results of man's efforts. All these descriptive ideas are either ideas about *nature* or ideas about *man, his work, or the results of his work*.

Reëxamination of the interpretive ideas with a view to discovering major subdivisions discloses the fact that each of the three differs in

type from the other two. Statement 12 points out a relationship existing between *facts about nature*; 18, if it gives an interpretive idea, points to a relationship existing between *two facts about human activities*, the production of sugar cane in Hawaii and the use of Hawaiian sugar in the United States; while Statement 20 gives the idea of a relationship between a *man-made* feature, the Honolulu coaling station, and a *natural* item, the width of the Pacific.

The classification of the twenty items, refined in the light of the foregoing considerations, may be indicated as follows:

I. Descriptive ideas

1. Of an encyclopedic type

(1) About nature: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13.

(2) About man and his work: 14, 15, 16.

2. Of an interpretive-element type

(1) About nature: 11, 12, 20.

(2) About man and his work: 17(?), 18(?), 19, 20.

II. Interpretive ideas of

1. Relationship between nature facts: 12.

2. Relationship between human facts: 18(?).

3. Relationship between human and nature facts: 20.

In analyzing the statements quoted, then, seven specific types of ideas are discerned. Realization of these types aids an investigator in seeing clearly the nature of some of the ideas whose value he is to investigate. In conducting similar analyses of book after book of 'geographic' material, one adds other types from time to time as he encounters an idea not belonging to any group he already has designated. It is to be noted that the purpose of this phase of the investigation is not to discover relative frequencies of the various types, but to find *all* the major types of ideas afforded. Until one knows what types of ideas are being presented, he has no objective basis for studies of their value in child-training. Later, in evaluative studies, the determination of frequencies is, of course, essential.

b. Discovering Types of Learning Experiences Provided. The same statements and exercise about Hawaii will illustrate the analysis of geographic material for discovering the types of learning experiences for which it provides. Obviously, the exercise provides chiefly for experiences with reading statements about nature facts, human facts, and relational facts, and with expressing those facts in words. In so far as one really reads, instead of merely recognizing words, this material provides experience with *getting correct descrip-*

tive and interpretive ideas from sentences containing technical, semi-technical, and place terms, such as 'island,' 'northeast,' 'volcanic,' 'north latitude,' 'trade winds,' and 'Atlantic,' and with using technical, semi-technical, and place terms in expressing such ideas. In so far as real reading is not done, the experiences are those of word recognition, memorization, and repetition. Question 5 provides for the experience of comparing two sets of nature facts and discerning a similarity between them. In connection with Statement 10, the reference to a picture obviously is designed to give the pupil experience with getting a descriptive idea about a natural feature from a picture instead of from words. Question 8 probably would provoke some reasoning.

To such a brief list of learning experiences, the investigator adds from time to time as he finds in other geographic materials provision for other types of learning experiences. Not until he knows what types of learning experiences are encountered in geographic study can he have a sound basis for investigating the general value of the subject from this point of view.

2. Major Types of Ideas and Learning Experiences Discovered

To give a complete list of the findings that have resulted from such analyses as the foregoing would require too much space here. It is essential, however, that a list of at least the major types discovered be introduced as a basis for making clear the nature of other phases of the investigation of geographic values. Each of the ideas or experiences listed has been found by the method of analysis just demonstrated. The list of ideas is labelled 'A' and the list of learning experiences is labelled 'B' for convenience in subsequent reference to them. The numbers on the left margin afford a tally of the types.

A. Major Types of Ideas Found in Geographic Literature

I. Descriptive ideas

1. Of an encyclopedic type
 - (1) About nature
 - (2) About man and his work
2. Of an interpretive element type
 - (1) About nature
 - (2) About man and his work

II. Interpretive ideas

1. Of relationships between *specific individual* elements
 - (1) Relationships between nature elements

5. (a) Introduced as ends in themselves
6. (b) Introduced as elements in man-to-nature relationships
- (2) Relationships between human elements
7. (a) Introduced as ends in themselves
8. (b) Introduced as elements in man-to-nature relationships
- (3) Relationships between human and nature elements
9. (a) Introduced as ends in themselves
10. (b) Introduced as elements in man-to-nature understandings of a larger order
2. Of *outstanding* major relationships between two or more given complexes or groups of elements
11. (1) Relationships between two or more given groups or complexes of natural elements
12. (2) Relationships between two or more given complexes of human elements
- (3) Relationships between given complexes of human elements and complexes of natural elements
13. (a) Relationships between the complex of human elements in a specific region (Italy, for example) and the complex of natural elements existing in that region
14. (b) Relationships between a complex of human elements in a specific region (United States for example) and the human and natural complexes in a group of regions that have afforded bases for the development of that specific human complex
15. (c) Relationships between a given type of human activity, such as the production of wheat, and human and natural complexes in a group of regions where this type of activity occurs
16. (d) Relationships between a given type of nature complex, such as rainy, low-latitude climate, and human and nature complexes in a group of regions where this type of nature complex occurs
- III. Ideas concerned with map and graph symbolism and with the significance of landscape features and technical terms
17. 1. Introduced as ends in themselves
18. 2. Introduced as means of getting descriptive and interpretive ideas concerned with relationships between man and his natural environment

Those who have been doing this work were surprised to discover that in many thousands of pages of geographic literature, no idea was found that is not to be classified readily in one of the eighteen groups here named. Several subdivisions of each have been found, but enough geographic literature has been surveyed to lead to the conclusion that

practically all, if not all, of the ideas that geography affords are of these eighteen types. As will be apparent in the later discussion, this finding has great significance not only in the problem of determining values but also in problems of selection, organization, and presentation.

Perhaps at this point the reader's attention should be directed again to the fact that the materials used in this analysis were not selected in accordance with any given definition of geography or any theories of what the subject *should* present. The only criterion for the selection of the materials used was that they be labelled 'geography' by their authors.

It also should be pointed out that, since the phrases used to designate some of the eighteen types may not make clear at once to every reader the exact nature of the ideas included in those categories (because of the brevity of the phrases and the difficulty of finding terms that convey identical ideas to all readers), the following procedure was used methodically in connection with the classification. The phrases chosen to designate the types, and illustrations of specific statements classified thereunder, were submitted to fifty or more adults, some trained in geography and others not so trained. These adults were allowed to ask questions about the type labels until they felt sure of the meaning the labels had for the investigators. With each category thus defined more definitely than any brief label could define it, each of the adults was given a hundred quotations from geographic literature and each was asked to classify the ideas he found expressed therein. Most of these adults were teachers or university students. The almost perfect positive correlation between the classification made by these performers and that made by the investigators was taken as evidence that the designations of the types, if carefully defined, were entirely workable. Better designations may be found; if so, they can be substituted readily. The substance of the findings would not be altered, however, by any improvement in expression.

The same procedure was employed in checking the list of major types of learning experiences that were discovered by means of the analysis illustrated earlier. The list thus derived and checked follows:

*B. Major Types of Learning Experiences Afforded by
Geographic Literature*

- I. Hearing, seeing, recognizing, and pronouncing words and sentences including technical or semi-technical geographic terms and place names
- II. Observing, visualizing, and recognizing actual or pictured objects or other natural and human elements designated by these terms
- III. Observing, recognizing, and naming specific map and globe symbols
- IV. Observing, visualizing, and recognizing actual or pictured objects or other natural and human elements signified by specific map and globe symbols

- V. Memorizing and repeating statements of facts about human elements, relationships between them, natural elements, relationships between them, and relationships between natural and cultural elements
- VI. Getting descriptive ideas (real reading as opposed to mere memorization and repetition) of natural and human elements from
 - 1. Actual landscapes or objects
 - 2. Pictures and diagrams
 - 3. Maps and globes
 - 4. Graphs and statistics
 - 5. Sentences, some of which include technical or semi-technical geographical terms and place names
- VII. Getting relational ideas of types named in A from statements expressing these ideas in words
- VIII. Getting interpretive relational ideas of types named in A *from one's own reasoning, based on knowledge of facts involved*
- IX. Checking ideas so gained from statements of such relationships
- X. Expressing descriptive or relational ideas by means of
 - 1. Sentences
 - 2. Map and globe symbols
 - 3. Statistical tables and graphs
 - 4. Drawings and diagrams
- XI. Using such ideas in reasoning concerning problems in which they are factors

There are, of course, numerous subdivisions under these major types. For example, experiences in observing, recognizing, and naming map symbols, and visualizing objects or other natural or human elements symbolized by them include experiences with the following types of map symbols and things symbolized by them:

- 1. Semi-pictorial symbols of natural features, such as land, sea, coast, river, mountain, and ocean current
- 2. Semi-pictorial symbols of human features, such as cities, railroads, streets, canals, roads, and political boundaries
- 3. Semi-pictorial *complexes* of symbols that signify natural land or water forms or features, such as peninsulas, isthmuses, straits, continents, islands, lakes, bays, oceans, deltas, valleys, divides, passes, sources, and mouths
- 4. Legend or key symbols for scale of miles, feet, or other units of measure
- 5. Semi-pictorial *complexes* of symbols that signify patterns of human features, such as city street patterns, shapes of cities, road patterns, patterns of navigated water routes, railroad nets, and city agglomerations or constellations

6. Non-pictorial symbols of dot, color-band, or color-spot types that signify patterns of natural features or elements, such as lowlands, highlands, rainfall, vegetation, fauna, minerals, and soils
7. Non-pictorial symbols of dot, color-band, or color-spot types that signify patterns of human features or elements, such as crop acreage, crop production, population, domesticated animal population, mineral production, lumber production, manufactural productions, commercial activity, and any other land or sea *utilization* pattern
8. Non-pictorial symbols of types that constitute what is commonly known as the map 'network,' such as meridians, prime meridian, parallels, equator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle, Antarctic Circle, north pole, and south pole
9. Non-pictorial symbols of the 'iso-line' type (isotherms, isobars, isohyets, contours) that indicate patterns of natural features or elements, such as temperature, pressure, precipitation, and topography
10. Non-pictorial symbols of the iso-line type (isopleths) that indicate patterns of land or sea utilization

Similarly, experiences with getting descriptive ideas from maps are subdivided readily into getting ideas concerned with:

1. Relative *location*, in terms of general distance and direction from other features
2. Exact *location*, in terms of latitude and longitude
3. Relative *distance*, in terms of "longer from A to B than from C to D"
4. Exact *distance* in terms of miles, as indicated by scale, or by degrees of latitude
5. *Shape* of given human or natural features, or of patterns of their distribution
6. Relative *area or extent* of given human or natural features and of regions or districts of any kind, in terms of "larger than region X"
7. Exact *area or extent* of such human and natural features or of regions in terms of exact distances
8. General or relative *direction* without use of map network
9. Exact *direction* gained from use of map network
10. *Elevation, slope, precipitation, soils, mineral deposits, pressures, temperatures, wind directions, direction of stream flow, intensity of any given type of land utilization*, and the like, at any given place indicated on maps symbolizing such elements
11. *Distribution* of any given human or natural element

Experiences with getting interpretive ideas from one's own reasoning include, in so far as they are concerned with maps, *reasoning based on a comparison* of descriptive ideas gained from maps, *and leading to the realization of relationships* that seem to exist between

two or more facts or sets of facts shown by the maps. For example, recognizing the probable relationships of:

1. Road patterns, railroad patterns, and street patterns to topographic features
2. Shapes of cities and countries to topographic features
3. Locations of cities to topographic and drainage features
4. Crop distributions to topography, soil, temperature, and precipitation
5. Population distributions to land-utilization patterns
6. Land-utilization patterns of any given type to patterns of distribution of natural elements affording bases for the utilization involved, such as the relationship suggested by map comparison between the lumber-production pattern and the forest pattern
7. Given patterns of natural-element distributions to other natural patterns, such as the relationship suggested by map comparison between the grassland pattern and the precipitation pattern

This list is by no means exhaustive and serves merely to illustrate types of reasoning experiences encountered as part of those indicated in one group named in Major Type VIII.

If available space permitted, the results of an analysis of other types of learning experiences could be presented in similar detail. However, a knowledge of the major types of ideas and learning experiences that geographic materials afford, together with the examples of subdivisions of map experiences given, provides a basis sufficient for one to follow understandingly the account of other major phases of the investigation of value, of curriculum, and of teaching procedures.

III. EVIDENCES OF THE VALUE OF GEOGRAPHIC OFFERINGS

1. Evidence Afforded by Unsolicited Comments

a. Procedure in Compilation. In finding evidences that offerings of the types indicated are, or are not, valuable in promoting the general educational aims enumerated, the investigator naturally turns to individuals who have gained such ideas and seeks to discover from them whether or not, as a result, they have made any observable progress toward acquiring the attributes helpful in coping with vocational, avocational, social, and civic problems. The nature of one such type of evidence may be illustrated by the following simple incident:

A fifth-grade child said to his teacher, "I had a better time this weekend at my grandfather's farm than I ever had there before because I noticed a lot of things I had never thought about before." "What, for instance?" the teacher asked. "Well, I noticed for one thing that the chickenhouses were

all built so that most of the windows faced south. I'd never thought of that before, but from what we'd learned in class, I knew he had done it because he'd get more sunshine inside of them that way and his chickens would do better and make him more money." Chickenhouses had not been mentioned in that class, but relationships had been pointed out between other human activities and the fact that, where they were carried on, the noon sun is always in the southern sky. Here was clear evidence that a child was using his understanding of those relationships as an aid in seeing into one of his grandfather's vocational problems. His ability to do so indicated that he would probably be able to apply that understanding to a similar problem of his own. His phrase "had a better time" indicated that he was able to derive more enjoyment than formerly from travel experiences by reason of having gained and used the type of geographic idea involved. Noticing that the idea in question is one to be classified as belonging to "Interpretive ideas, relationships between human and natural elements, A, II, 1 (3)," this incident furnished objective evidence that in this instance an idea of this type contributed definitely to the ability of its possessor to think soundly about one phase of a specific vocational or economic problem and that it also contributed to his ability to enjoy travel. It is to be noted further that the ability to enjoy this visit more than earlier ones was due, according to him, to the satisfaction he got out of *using* his ideas in 'seeing into' the chicken-raising problem.

Hundreds of such incidents have been recorded by the coöperating investigators and have been filed under the types of ideas and types of learning experiences involved. All those that had to do with a given type of idea or a given type of learning experience were analyzed as this sample was, to see just what attributes helpful in dealing with problems of everyday living apparently had been gained in some measure by those whose comments evidenced such gain.

b. Major Findings. The following table indicates the distribution of the first five hundred of these individual, unsolicited testimonials (of the type indicated in the 'chicken house' sample) with reference to types of ideas the value of which was evidenced.

TABLE I.—TYPES OF IDEAS INDICATED AS VALUABLE

Descriptive Encyclopedic Facts about Man and Nature, A, I, 1.....	2
Relationships between Nature Elements, A, II, 1 (1).....	33
Relationships between Human Elements, A, II, 1 (2).....	19
Relationships between Human and Nature Elements, A, II, 1 (3).....	357
Interpretive Ideas of a Larger Order, A, II, 2.....	44
Map Symbolism Ideas, A, III, 2.....	45
Total Number	500

It is obvious that ideas of relationships between man and his natural environment are those the value of which has been evidenced most frequently in the comments analyzed. The insignificant proportion of encyclopedic facts cited is as striking as the large proportion of human-natural relationship ideas. One child cited the fact that he enjoyed a visit to Italy more because he had learned what a crater is before he saw Vesuvius. Another stated that on an automobile trip he liked to go through towns the names of which he knew better than he did those with names new to him. These two statements evidenced the contribution of mere factual ideas to an ability to appreciate travel (avocational) experiences. In the 498 remaining instances, the relational ideas noted had contributed directly, as in the example cited, to the sixth of the attributes named as objectives of general education; namely, the ability to think sanely, upon sound bases, concerning social, economic, or civic problems. In 203 cases, enjoyment in reading or travel also was noted. It was clear, as in the example cited, that the ground for enjoyment had not been the mere factual knowledge involved, but rather the insight into some phase of a problem encountered in those avocational experiences, which insight had been gained by applying a relational idea to the situation observed. It is obvious, of course, that experiences in connection with the study of geography would increase command of fundamental tools of learning, as would reading in any field. It is equally obvious that contributions to this objective would not be evidenced in such unsolicited testimonials, except as the expression of a greater liking for reading might suggest more reading as an avocational pursuit and so point to the greater ability that might come with greater practice. The most significant finding from the standpoint of value is that interpretive ideas, especially those of relationships between man and natural environment, have contributed, as these testimonials show objectively, to at least the sixth of the general objectives in question, and, through that contribution, to travel and reading as avocational interests. Since children tend to comment most on what they feel most strongly or frequently, this type of investigation is perhaps more reliable as an index of values that children attach to various types of ideas than an analysis of solicited reactions would be. Since, however, one finds in these unsolicited comments only some of the types of ideas presented in geographic literature, reactions must be sought in a more formal way in order to secure greater variety.

2. Evidence Afforded by Questionnaires and Interviews

a. *Typical Studies.* The study by Miss Dorothy Mandeville, reported by Miss Zink elsewhere in this volume, illustrates the use of questionnaires in collecting data concerning the relative value of interpretive and encyclopedic descriptive ideas in giving children pleasure in reading. In this case, a single factor—interest in reading—was abstracted and, by means of questionnaires, reactions of children of the Rockford, Illinois, school system to a group of readings of a purely descriptive character and to others of an interpretive character were secured and compared. The study shows that, in so far as avocational enjoyment hinges on interest in reading, relational ideas contribute to it and function in this capacity to a greater extent than descriptive ideas in a great majority of the cases examined.

For ten years, experiments resembling the one conducted by Miss Mandeville have been tried with adult students registered in courses in geography methods at the University of Chicago. In class after class reactions have been unanimous to the effect that relational ideas were much more interesting than purely descriptive ones of an encyclopedic type.

Another type of study is that in which a single reading containing numerous relational ideas is used as a basis for questions as to the contribution the ideas expressed therein make to ability to solve specific problems. The reading used in one study in this way was an article on Wales.¹ The following questionnaire was based on it and replies were made by three hundred twenty-four teachers:

1. Would you enjoy traveling in Wales more after reading this account than before, or not? Why?
2. After reading this article, would you know better than before how to plan a satisfactory wardrobe for a sojourn in Wales? If so, show why.
3. Suppose you were an advertising agent for a steamship line. Would this article help you to write material designed to attract tourists to Wales? If so, give examples of ideas that you think would be among the more helpful ones for that purpose.
4. Suppose you were to read next week of the reactions of people in different parts of Britain to a new governmental policy with regard to mining regulations. Would ideas expressed in this article probably be helpful to you in understanding Welsh re-

¹Leppard, H. M. "Geography for the high school." *Jour. of Geography*, 23: Dec., 1924, 256-264.

- actions to the policy? If so, give an example of an idea that you think would so function, and show how you think it would do so.
5. If you were offered a position with a manufacturing firm in Wales, might ideas expressed in this article help you in making a decision with regard to the offer? If so, tell which ideas might be helpful, and show how they might be of assistance.
 6. If you were to live in a part of the United States where there are many people of Welsh descent, would ideas expressed in this article help you to understand their attitudes and habits? If so, cite an idea that would be helpful and show how you think it would be of assistance.
 7. If you were a member of a committee in Congress considering a tariff policy with regard to tin plate, would ideas expressed in this article help you in giving fair consideration to the matter? If so, show how.
 8. Did the article give you more respect for the Welsh people and their accomplishments than you had before? Why?
 9. Will other articles and books on Wales attract you more than formerly because of ideas gained from this article? Why, or why not?
 10. If you think there are other situations in which ideas expressed in this article might function helpfully, give examples, and in each case tell how you think they might be of value.

An examination of the answers to this questionnaire showed that all replies to the first parts of the first nine questions were in the affirmative. In eleven percent of the cases involved, however, the concrete illustrations given were not such as to substantiate clearly the positive reactions made. The persons reacting in these cases apparently had a vague notion that the ideas would be of value, or imagined, from the form of the questions, that they should so think, but they gave no evidence of really seeing the value. The remaining eighty-nine percent made clear the exact type of contribution that, in their opinion, the ideas they cited would make.

In classifying the types of ideas they cited as helpful, it was found that seventy-seven percent were ideas of relationship between man and his natural environment, and the remainder, descriptive ideas. Since the questions deal with (1) avocational interest and pleasure in travel, (2) ability to adjust clothing (a 'way of living') to natural environment, (3) ability to pursue one's vocation effectively, (4) ability to interpret current events, (5) choice of a location in which to work, (6) attitude toward peoples in one's own country, (7) attitude toward, and part in formulating, governmental policies, (8) sympa-

thetic understanding of other peoples, and (9) interest in reading as an avocational pursuit, the reactions furnish objective proof that, in the opinions of a large majority of those who answered the questionnaire, ideas of the types indicated contribute definitely to the solution of avocational, vocational, social, economic, and civic problems of the specific types involved. They also furnish objective evidence of the fact that, in making such contributions, ideas of relationships of man to his natural environment are of much greater significance than ideas that are merely descriptive.

The answers to the tenth question supported the conclusions reached from the study of the answers to the first nine. Thirty-one percent of those reacting made only a general statement, such as "in numerous other ways." Of the instances cited by the remainder, those listed with greatest frequency were, in essence: shaping an immigration policy, choosing appropriate sites for naval and packet stations, consideration of water-supply problems, the choice of sites for government centers, and problems concerned with trade in coal. Since these were cited independently by those questioned, the answers to the tenth question have a value similar to that of unsolicited comments.

Another type of questionnaire that has been used in gathering evidence as to the value of ideas found in geographic literature and of learning experiences involved in its use was based on the lists of major ideas and experiences presented earlier in this chapter. These lists were submitted to 372 adults, together with statements from literature that illustrated each type. These persons were requested to mark with a plus sign those ideas and experiences that they considered of significant value to an individual in solving everyday problems of living, and to mark with a minus sign those they thought were of little or no value. The ideas that were consistently marked minus were descriptive ideas of an encyclopedic type. Thirty percent also marked minus ideas of map and graph symbolism as ends in themselves. Of the learning experiences, those which consisted of memorizing and repeating statements of facts and relationships were marked minus by 91 percent of those reacting. With the exception of these encyclopedic ideas and memorizing experiences, all ideas and experiences listed were thought to be of value by 80 percent or more of those questioned.

The questionnaire was followed by interviews in which each person who had responded was asked to explain why he had rated as he did

the various items, and to give examples of ways in which the types of ideas and experiences he had rated 'plus' had functioned, or, in his estimation, would function. Facts revealed by these comments were:

1. All ideas and learning experiences listed, with the exceptions noted, *had* proved of value to these individuals in their everyday living.
2. Eighty-three percent of those reacting asserted that the greatest contribution geography had made to their ability to solve various problems had been made by ideas of relationships between man and his natural environment. The 17 percent who did not so react said they had gained few such ideas in their geographic study.
3. Isolated descriptive facts and mere memorization of them were condemned on the general grounds (1) that in most cases such facts were not retained, (2) that mere memorization accordingly was wasteful of time and effort, (3) that in gaining interpretive ideas one came into possession of facts in such a way that they were retained, and (4) that if knowledge of a fact that one had not acquired thus were needed, it could readily be gained if one knew how to use source materials effectively.
4. All recognized that their study of geography had contributed to command of fundamental tools of learning; 15 percent of them gave examples of contributions to esthetic appreciation; 35 percent, examples of contributions to manual skill gained in map-expression and graph-expression work; 11 percent, examples of contributions to ethical standards, gained from seeing reasons for variations in such standards among other peoples; 3 percent, examples of contributions to health understandings; and 100 percent, insights into various phases of vocational, avocational, social, economic, or civic problems.

b. *Conclusions.* In the questionnaire and interview types of studies, the evidence furnished concerning the value of ideas in geographic literature and of related learning experiences was in harmony with that derived from unsolicited comments; it tends to strengthen the theory that such ideas and experiences are of much value in solving problems of everyday living. By reason of the more formal character of the work and the difference in the maturity of the informants, the questionnaires and interviews indicated a wider range of contributions than the informal comments did.

The findings from both sources point clearly to the relatively great value of interpretive ideas, especially those of relationships between man and his natural environment, and to the slight value of mere encyclopedic facts about man and nature, and of the memorization of such facts.

3. Other Types of Evidence

a. From Analysis of Literature and Observations. A third line of procedure followed in gaining evidences of the value of geographic ideas was that of compiling instances from literature and from observations of the activities of others of (1) the functioning, in problems of everyday living, of ideas of the types listed earlier in this chapter, and (2) failures traceable in part to lack of those ideas. Very simple illustrations of such instances follow.

Mr. Z decided not to embrace an opportunity to acquire 160 acres of land in a semi-arid section of the United States. He decided on the ground that 160 acres of this type could not afford him a living, and in so doing applied a knowledge of relationships between crop production and animal production, on the one hand, and semi-aridity on the other hand.

Mr. W, deceived by the opportunity to take up a similar tract of such land, accepted, and found from bitter years of hardship that he had been unwise. His loss and hardship are traceable directly to his lack of knowledge of the type possessed by Mr. Z, or to his failure to use it.

The compilation of numerous data of this sort shows that unquestionably loss and suffering have been prevented in many cases and might have been prevented in many others by the possession and use, on the part of the persons involved, of certain fundamental ideas of relationships between man and his natural environment.

b. From Analysis of Current Problems. A fourth line of investigation was to analyze problems that confront citizens, with a view to discovering types of insights that would contribute to their solution. Vocational, economic, social, civic, and avocational problems were selected, with as wide a range of types of each as possible. The findings show that the specific ideas needed in each case as sound bases for solution belong to three categories: (1) ideas of relationships between natural elements, (2) ideas of relationships between human elements, and (3) ideas of relationships between human elements and natural elements.

IV. SUMMARY

If the various studies and analyses that were made had led to conflicting conclusions as to the value of geographic ideas in general education, a more extended investigation would have been necessary. Since, however, there was pronounced agreement in the findings reached by every method employed, and since these methods represented considerable variety of approach to the problem, it seems valid to conclude: (1) that the value of 'geography' in the training of children depends upon the type of geography involved, (2) that, in so far as the material presented is a mere mass of encyclopedic facts, its value is negligible, and the ideas and learning experiences involved have little or no claim for recognition in a curriculum designed for general education, but (3) that, in so far as the material presented is such as to give the learners ideas of an interpretive type, ability to gain such ideas for themselves, and power to use them effectively in practical situations, geography can make very valuable contributions to child-training.

It seems, moreover, from the variety and scope of the contributions evidenced, that the values potential in geographic training have a high measure of universality. If realized, they apparently would function (1) in the life of any individual in any region and (2) in the affairs of any economic or political group and of many social groups. Furthermore, they apparently would function frequently in many and varied types of individual and group problems. Finally, these values, by reason of their relation to individual and coöperative living, promise to be as nearly permanent as human life upon the earth.

CHAPTER VIII

INVESTIGATING THE CURRICULUM IN GEOGRAPHY

EDITH PUTNAM PARKER

I. ATTITUDE TOWARD THE PROBLEM

What has been said in Chapter VII concerning the value of interpretive ideas presented in geographic literature and of specific learning experiences involved in acquiring these ideas indicates that such ideas and the experiences should have some place in a curriculum designed for general education. But what place? The correct answer can be discovered only by determining objectively the relative value of the outcomes derived from various educational programs formulated in accordance with various hypotheses concerning the relation of geographic training to general training. Accordingly, all contentions with regard to the proper place of geography in the curriculum must be viewed as expressions of opinion or as 'working hypotheses' until proof of their validity or non-validity shall have been established.

The merits of hypotheses differ, however, with the scope and accuracy of the considerations on which they are based. It would be a waste of effort to experiment in terms of any hypothesis not in harmony with findings that could be revealed by a thorough analysis of facts already available. Impatience often is evidenced with this analytical step in research; it doubtless arises from the great amount of time and effort involved, and from an unwillingness to delay related experimental studies. Nevertheless, analysis of this type is a vital initial step in investigation, and saves much time and effort in the long run.

II. MEANING OF THE PHRASE 'RELATIONSHIPS BETWEEN MAN AND HIS NATURAL ENVIRONMENT'

Since it will be necessary to refer repeatedly in this discussion of the curriculum to the phrase 'relationships between man and his natural environment,' it is advisable to explain the meaning attached to it.

'Natural environment' is not synonymous with 'physical environment,' but is used to denote all elements in the natural surroundings—physical, faunal, and floral. For example, insects, wild animals, and forests (when not planted by man) are elements of the natural environment, just as are climate, surface features, minerals, and the like.

'Man' designates all human items, in contrast with facts about nature. Human items include facts about the distribution of population; patterns of land utilization; human activities, such as farming; methods of utilizing natural resources (drift mining, or open-pit mining, for example); landscape features, such as a standing crop, that evidence human activity; the characteristics, customs, and cultural assets of given peoples (acquired knowledge and skills, command of tools, and the like); and human attitudes toward specific problems. All human items are designated also as 'cultural items.' Facts about people shown on a population map and those about human activity shown on a map indicating acreage used for the production of wheat are human (or cultural) items, as are also such random facts as that many Chinese worship their ancestors or that New York is a large city.

'Relationships' is used to cover all ways in which human items of these varied sorts are related to natural features or conditions. Specific illustrations follow.

People have settled densely one region, such as northeastern United States, and have left another, such as Antarctica, without permanent settlement. How are these elements in the population pattern of the world related to natural environment? Natural resources and conditions in northeastern United States do not cause dense population there, in the sense that heat causes gases to expand. If they did, the population would have been dense there centuries ago. Instead, they merely afford certain bases for earning a living there. Only as people, for one reason or another, decided to come into that region, recognized its opportunities, and capitalized them in making their livings there, did the population of the region become dense. Natural resources and conditions in northeastern United States, then, only help to explain the density of population in the region. Similarly, men have recognized that natural resources and conditions in Antarctica do not afford the bases for earning a living there, and so have decided that to settle in that region would be to make a maladjustment to natural environment. Permanent settlement could be maintained in Antarctica, but the expense and discomfort involved in so doing would be such that man has chosen not to do so. Settling the one region densely and not settling the other permanently constitute adjustments man has made to two different types of natural environ-

ment. In each case, the will and judgment of men have played a part, and natural environment merely helps to explain why population is dense in the one case, and why it is lacking in the other.

People in one region carry on farming with the aid of irrigation and in another without such aid. The scant rainfall in the former helps to explain the practice of irrigating the land; it does not cause irrigation. Man decided, since other advantages for farming were found there, to try to offset the handicap of scant rainfall in this way. In the second region, adequate rainfall helps to explain why irrigation is not practiced. Nothing in the natural environment there prevents its practice, but man's judgment leads him, in view of the rainfall conditions, not to irrigate.

In one region where irrigation is practiced, crude devices are used for applying part of the natural flow of the streams to restricted areas of contiguous land; in another region, a huge dam impounds the flood waters of a mighty river and hundreds of miles of mains, laterals, and ditches convey them to scores of thousands of acres. In both regions, scant rainfall helps to explain why irrigation is practiced, but a vital factor in explaining the dissimilar methods of irrigating is the difference in the cultural assets (capital, engineering skill, commercial enterprise, and the like) of the peoples involved.

As the foregoing illustrations suggest, the relationships between man and his natural environment with which geography deals are not those between man in the abstract and nature in general, but between specific groups of people and particular natural environments. Since the utilization of the available natural resources by a given people is explained in part by the judgment and cultural assets of those people, natural environmental items never are *the cause* or *the reason* for any human activity concerned with them. A study of relationships between man and his natural environment means, then, a study of *how* natural environment *helps to explain* man's distribution, his utilization or non-utilization of available natural resources, and so on. The 'how' cannot be understood apart from the cultural assets of the specific peoples involved. *Since human items never are related to natural environment in the sense that the natural items explain fully, or are the sole cause of, the human items in question, there is no deterministic, or cause and effect, implication in the term 'relationships.'* The judgments and cultural assets of peoples are always as vital in explaining their distribution and their relations to the earth as are the natural items involved.

To summarize, the phrase 'relationships of man to his natural environment' implies 'explanations of how the characteristics and cultural assets of specific groups of people and the aspects of the specific

physical, floral, and faunal environment in which they live are factors in the development of population patterns, of specific types of utilization of natural resources, of the landscape features that manifest those types, of specific ways or habits of living, and of patterns of the distribution of such types and features.' In other words, the phrase implies 'explanations of how the kinds of people who live in given regions and the natural surroundings in which they live help one to see why they live where they do in those regions, why they make their livings as they do, why they use certain methods in their work, why given activities and signs of these activities in the landscape are distributed as they are, and why certain customs with regard to food, clothing, shelter, travel, play, and the like have developed there.'

From this explanation it should be clear that: (1) the study of such relationships is of the scientific or interpretive type, and not a descriptive or merely informative one; (2) since no two groups of people are exactly alike and since no two regions have exactly the same natural aspects, most of the interpretive ideas involved are of a more specific nature than are interpretive ideas (such as are many of those found in natural sciences) which involve constants instead of variables; (3) accurate expression of these specific relationships necessitates the avoidance of any terms or phrases implying that natural environment causes or fully explains human items; and (4) *the study of such relationships is, of necessity, a study of regions*, since, obviously, it is only in the interpretation or partial interpretation of human items concerned with specific regions that specific ideas of relationships between man and his natural environment can be developed.

The terms 'adjust,' 'adjustments,' 'readjustments,' and 'maladjustments,' as used in this discussion, have no unusual or technical meaning. They are mentioned here merely because their frequent use in recent books and articles dealing with geographic relationships has led laymen to ask whether any unusual meaning should be attached to them. For example, geographic statements are made that one 'adjusts' the weight of his clothing to weather conditions; that a farmer 'adjusts' the load of grain he hauls to an elevator to the condition of the dirt road over which he hauls it; that an iron and steel company 'adjusts' the number of vessels used to carry ore on the Lakes to the amount of ore needed that season for the furnaces to be fed, and 'adjusts' the furnace output

to market demands; that men 'adjust' the shapes and sizes of water and rail carriers to the nature of the commodity to be carried. In geography, as in common parlance, to make an adjustment to any condition merely means to do something which is in harmony with it. It is vital to note, however, that a given successful activity commonly represents adjustments not to a single factor, but to a complex of factors, some cultural and others natural. In making an adjustment to one factor, one may make a maladjustment to another. To use land for growing wheat in a given region may be in harmony with climatic and topographic conditions and yet not be a profitable use of the land because there is no way of getting the wheat to market. To make an adjustment to a complex of factors, one must do what harmonizes best with the group as a whole.

It also is vital to note that what constitutes a geographic 'adjustment' in a given region at one time may later constitute a 'maladjustment' to the complex there. In any mining locality, for example, the supply of available minerals is being reduced. For miners in a given settlement to try to support themselves by mining after minerals have been exhausted there obviously would constitute a 'maladjustment' to the changed conditions. In moving away from this community or in making a living instead by the use of other natural resources at hand, they would be making 'readjustments' to the altered complex.

In saying that relationships between man and his natural environment may be expressed as adjustments, readjustments, and maladjustments of man to nature, one is merely taking pains to indicate that in such relationships the will and judgment of the people concerned are involved quite as much as the natural conditions and resources in question. The use of the term 'adjustment' and its relatives, then, merely affords another way of saying that natural environment helps to explain what man does, but never fully explains it.

'Adjusts' has been used increasingly to replace such terms as 'determine' and 'control' because it avoids the implication inherent in the other terms that man's will and judgment are negligible factors in the relations between man and the earth. If used in its normal, ordinary sense, it precludes any idea of determinism. Finally, an understanding of the specific implications of the phrase 'relationships of man to his natural environment' as used in this report is essential to the intelligent perusal of the accounts of investigations which follow.

III. DETERMINING THE DISTINCTIVE OFFERINGS OF GEOGRAPHY

1. Importance of the Determination

The investigations reported in Chapter VII show that interpretive ideas of three types found in geographic literature have considerable value in training one to take part effectively in the ordinary affairs of life. This fact, however, does not warrant necessarily the inclusion of geography or of geographic ideas in the curriculum designed for general education. To cite a somewhat analogous situation, one may know that a given kind of food affords valuable nutritive elements and yet not need to accord it a place in his diet, because those same elements can be secured as well, or better, in other foods. The further point to be considered is whether the food in question affords nutritive elements that are distinctive, different from those of other foods. The valuable offerings of geography as shown in Chapter VII are interpretive ideas, and facts and abilities contributing to their acquisition. It is of prime importance to know whether these interpretive geographic ideas are distinctive. If they are not, obviously one could not hold logically that the subject deserves a separate place in the general curriculum. If they *are* distinctive, they should be introduced into the curriculum in such a way that their unique educational values will be derived. It is conceivable that this end may be achieved even if geography be not taught as a separate subject. The critical point is not what the ideas are called, but whether or not, if distinctive, they are so used in training youths as to result in those valuable outcomes that they alone can contribute toward the attainment of the goals of general education.

2. Methods Employed

To discover the truth as to the distinctiveness of geographic offerings, they must be compared with those of other subjects. Comparison necessitates analyses of other subjects somewhat similar to, but less extensive than, the analysis of geographic offerings described in Chapter VII. By such a procedure one finds the outstanding ideas presented in other definitely organized bodies of material and so has ground for impartial comparison. The details of these analyses need not be set forth because the technique employed has already been illustrated. We may pass at once to the results gained by the comparison.

3. Findings and Conclusions

1. Analyses of natural sciences show clearly that their general theme is that of relationships existing between natural items. The major offerings of these subjects are interpretive ideas of this type, and such abilities and descriptive ideas as inevitably are involved in acquiring them, or result from them.

2. Analyses of the strictly social studies show clearly that their general theme is that of relationships between human items, knowledge of which leads to understandings of the nature, function, and development of nations and various human institutions, in the broad sense of that term. The major offerings of these subjects, then, are understandings of this type, and such abilities and descriptive ideas as are inherent in, or grow out of, their acquisition.

3. In so far, then, as geographic offerings consist of (a) ideas, *as ends in themselves*, of relationships between natural items and (b) ideas, *as ends in themselves*, of the nature, function, and development of nations and human institutions, the offerings of geography are not distinctive.

4. On the other hand, there is found in no other subject a well-rounded body of rationalized experiences with ideas of relationships between man and his natural environment. In so far, then, as geographic offerings consist of ideas of this type, and of abilities, other relational ideas, and descriptive ideas that result from acquiring them, they are distinctive.

5. *It follows that decision with regard to the place of geography in the curriculum designed for general education should rest on the value of the contributions that insights into the relationships of man to his natural environment make to that training. It follows, also, that such insights on the part of pupils should be the major immediate objectives of any and all geographic training in the period of general education. Only on the ground of the distinctiveness of these offerings do ideas that geography has presented merit a definite place in that curriculum.*

6. *Realization of the distinctive theme that geography develops resolves itself into an understanding of criteria for the selection of material to be presented in developing its distinctive ideas. It would be absurd, of course, to assume that no relationships between natural items and no relationships between cultural items have a legitimate*

place in truly—that is, distinctively—geographic material. One sees the relationship of rubber gathering to steady high temperatures and abundant rainfall in Amazonia only by seeing that tropical forests, a natural item, are related to such temperatures and rainfall. The center of interest, however, is not the relationship between the natural elements but that of man to the forest, and, through the forest, to high temperatures and much rain. In so far as relationships between natural items are needed and used in helping to explain why population is distributed as it is, why various human activities are distributed as they are, why the methods and policies involved in the utilization of natural resources are employed, and the like, they remain, of course, an integral part of the material bearing on the distinctive theme that has been developed in geography.

Similarly, one cannot see how the export of raw cotton from the United States is related to natural conditions in the country without seeing how export, one human item, is related to production of cotton in the South and to consumption of cotton in the United States, two other human items. One also must see how the production, in turn, is related to surface, soil, and climatic conditions in the South, and how consumption, in its turn, is related to the existence and specific location of power, fuel, and other resources available in various localities. In so far as relationships between cultural items are needed and used in helping to explain how given human facts are related to natural conditions, they remain, of course, an integral part of the material bearing on the distinctive theme that has been developed in geography.

On the other hand, one might make a detailed study of all the plant forms making up a tropical forest, and of the structures of these plants, to the end that relationships between them and various physical factors might be worked out and generalizations derived therefrom which involve only floral and physical factors. Such a study would not constitute a legitimate part of the material bearing on the distinctive theme of geography. It bears instead on the distinctive theme that botany has developed. Similarly, a detailed account of the sequence of events in a given region leading to a major understanding of the stages in the evolution of certain human institutions is not geographic, but historical, material.

In tracing geographic relationships one may need to use some of the generalizations and specific relationships that botanists, historians,

and other specialists supply. In so far as such understandings are needed and used in helping to explain relationships between man and natural environment, they constitute elements in those relationships and are, accordingly, in that connection, geographic elements. There is a distinct difference, however, between (1) the organization of material to the end of deriving generalizations concerned merely with relationships between natural elements, or generalizations concerned merely with relationships between cultural elements, and (2) the use of some such relationships and generalizations in explaining relationships between man and his natural environment to the end of deriving generalizations concerning man's adjustments to his natural environment. The former is not geographic in the distinctive use of that term; the latter is distinctively geographic. In so far as geography includes the former, it is merely duplicating the offerings of natural sciences and social studies. In so far as it centers on the latter, it is making an offering of its own.

To summarize, the distinctive offerings of geography toward the goals of general education consist of (1) major understandings or generalizations concerned with man's adjustments to his natural environment; and (2) any relationship ideas (natural-natural, cultural-cultural or cultural-natural) that are needed and used in developing such understandings, any facts or concepts needed and used in gaining such relational ideas, and abilities, habits, and attitudes that are gained in the course of, or result from, the acquisition of such knowledge. Only in so far as geography makes these offerings does it warrant a place in the curriculum, since all its other offerings are duplicates of those made by other subjects.

7. Comparison of the offerings of various subjects throws light upon another matter of much importance in determining the proper place of these subjects, or of ideas which they have developed, in the general curriculum. Many facts used in one subject are used also in various other subjects. To cite an illustration, the fact that amorphous graphite is used in lead pencils was, in our analyses, found in history, geography, geology, and economics. One's first tendency is to say: "Here is waste through duplication. If this fact is worth learning, introduce it once for all time and see that it is mastered." Further analyses show the folly of this assumption, because they reveal that the fact was used differently in each subject, and, in each case,

contributed definitely to a valuable idea different from each of those gained through the other uses of it.

In history it was introduced as an item in the development of the art of written expression. Not until there was invented the process of mixing amorphous graphite with clay and encasing the mixture in wood did the pencil become a widely used tool. The value of this idea of development lies in the fact that it can hardly fail to give the child an appreciation of tools so common in his experience that he otherwise might give them no thought, and some idea of what even a simple invention may mean in the everyday lives of people through centuries. It would have been well-nigh impossible, moreover, to develop this valuable idea without the use of the particular fact in question.

In geography, the same fact was introduced in the course of explaining why the manufacture of pencils in the United States is localized chiefly in the New York metropolitan area. The collection of raw materials was one factor involved, and among those materials was amorphous graphite, brought largely from Mexico. The value of the main idea to which the fact contributed in this case lies chiefly in the insight one gains into factors to be considered in manufacturing and in many activities related thereto. Again, the factors in this case could not have been understood without knowledge of the types and sources of raw material involved. It is also to be noted that the use of the fact in gaining the idea of the development of the art of written expression could not result in the understanding gained through its use in geography.

In geology, the fact was used in making clear the difference in the properties of amorphous and crystalline forms of mineral products. The fact that the amorphous kind of graphite could be mixed with clay to form a product known as 'lead' in ordinary pencils and the reasons why in this form it left a streak were effective means of making clear some of its properties. Such an understanding of the properties of minerals is, of course, useful in various situations and would not result from gaining either the historical or the geographic understandings noted.

This same fact was used in economics in developing the idea of the function of money as an exchange device. It was cited that in the case of a pencil, the money one pays for the finished product is exchanged for the wages of miners of amorphous graphite, clay-diggers, tin-miners, tin-plate makers, rubber-gatherers, copal-diggers, gold-leaf makers, laborers in factories, and the like; for services such as transportation; and for the raw materials, such as amorphous graphite. To barter for these numerous services, commodities, and types of labor would be most inconvenient, whereas the use of money as a means of paying for all of them greatly facilitates exchange. Again, this idea would not have resulted from any or all of the three other understandings cited.

These illustrations make it clear that, in order to function in the acquisition of a given valuable idea, a given fact must enter into a

specific combination of facts so manipulated as to lead to that idea. To function in the acquisition of a different idea, it must enter into a different combination manipulated differently.¹ It follows that random facts such as that amorphous graphite is used in lead pencils, that New York is near the mouth of the Hudson River, that Rhode Island once had two capitals, and thousands of others used in acquiring major ideas of various types are items that, in themselves, cannot be classified as belonging exclusively to any subject. Classification hinges on use, and upon the nature of the major ideas gained through use.

The foregoing finding is of major importance in the question of integration of various subjects in the curriculum. One finds in current educational literature that many bodies of material are called 'integrated' on the basis that some of the facts they contain are used in other subjects. A combination of facts so manipulated that the major understanding gained is one of the evolution of the colony of Virginia, for example, is said to have ten percent geographic quality because ten out of the hundred facts used in developing this historical idea are also used in geography.² In the light of the findings of this analysis those facts belong no more to geography than to history, and in this instance are historical, not geographic, facts, because they are used to develop an idea bearing on the theme of history. One who realizes that in geography these facts would be used in an entirely different combination toward an entirely different end sees that, since no geographic end is reached through their use, there is no geographic content in the unit.

Facts are the raw ingredients upon which all subjects draw in developing specific types of major ideas. Since each type of major idea,

¹ Facts may be compared with raw food materials such as flour, salt, and sugar. These ingredients may be used in one combination so manipulated as to produce cake and in another to produce pie. It is impossible to produce both cake and pie by means of one combination and one manipulation.

² No one thinks of cake as having a 'thirty percent pie content' because some of the ingredients of the two are identical, for the food products resulting from different combinations of those common ingredients with others and from different manipulations of the mixtures have distinctive qualities which one does not confuse. Having once tasted cake, one realizes that he has a different product when introduced to pie or bread, and that each of these products is palatable, whereas the raw ingredients are not. One may decide not to call cake 'cake' and pie 'pie,' but just to call them 'foods.' Calling them by the same general name does not make them alike. There remain products with recognizable differences. Cake supplies a sugar content and a dessert need in one's meals which bread does not. Each meets a definite, but different, need of the human system.

as analysis of current problems shows, contributes to needs not met in full by any or all other types, each of the types seems to warrant representation in a curriculum designed for general education. Moreover, nothing short of a *specific combination and manipulation* of facts to the end that a *given* major idea of a *given* type is gained can be said logically to constitute representation in a curriculum of the subject that has supplied distinctive ideas of that particular type. To use the fact that the forests of Amazonia are explained in part by high temperatures in the process of showing why population is sparse in the region is not 'repetition' of a botanical item or 'borrowing' from botany. *Any subject has a legitimate, but not exclusive, claim to any fact or idea, whatever its nature, that is needed and used in developing major ideas, understandings, and insights distinctive to the subject.*

Accordingly, geographic content, regardless of what it is called or of when and how it is introduced into the curriculum, consists of facts of varied nature so selected, combined, and manipulated as to lead to accurate understandings of cultural-natural relationships, and includes only facts so used.

8. *Geography of the past, commonly called 'historical geography,' is as distinct from history as is geography of the present.* In geography of the past, just as in geography of the present, facts are so selected, grouped, and manipulated as to lead to understandings of the relationships of population patterns, land-utilization patterns, and other human items to natural environment in given regions. The only difference is that the items involved in the former obtained in the past. Geography of the past is not concerned with the development of nations and of other human institutions. It is concerned, instead, with stages in the evolution of man's adjustments to his natural environment in specific regions. Just as there is a geography of the past as well as a geography of the present, so also there is a history of the present as well as a history of the past.

9. In elaboration of the ideas just presented, a few considerations may be adduced with respect to the relation of history to other subjects. Various subjects, in developing distinctive major ideas, draw upon special phases of evolution involving facts of the past as well as those of the present. In geology the evolution of land forms and of earth features is traced; in botany accounts are included of sequences of plant associations and the story of the evolution of plant forms and structures; among the ideas presented by zoölogy are those of the

evolution of animal life; in the offerings of astronomy are found narratives of the evolution of astral and planetary bodies and their movements; and in climatology, climatic cycles and trends are treated in addition to the nature and interpretation of present climatic phenomena. The various phases of evolution presented by geography and by the natural sciences were discovered, not by historians, but by specialists, respectively, in geography and in those sciences. History, as a field of investigation, has not been concerned with the derivation of these distinctive, scientific phases of evolution. As a subject of instruction, it has not dealt with 'historical' geology, paleo-botany, biological evolution, planetary development, climatological cycles, nor with stages in man's adjustments to his natural environment.

Clearly the term 'history' is used with two very different meanings. There is a tendency to label 'historical' any idea concerned with the past or with evolution of any kind. Almost any fact of the past or present may function in tracing *some* phase of evolution. If 'history' is used to designate all knowledge concerned with evolution of any kind, it forthwith designates most, if not all, of human knowledge. It includes not only 'history' in its distinctive sense, but also many other subjects. In its less inclusive meaning, 'history' seemingly connotes ideas concerning the evolution of nations and of other human institutions—ideas which have been derived through the research of historians and have been presented in history as a subject. It is confusing, of course, to call by the same name many phases of human knowledge and also one special phase of it.

It seems clear, also, that no simplification of human knowledge would be effected by calling all knowledge 'history.' If the term is used in this sense, there remain as many distinct phases of 'history' as there are distinct phases of human knowledge. To trace any distinct phase of evolution, the assembling of facts relating to that specific phase and their interpretation are necessary. Analysis and experimentation have disclosed no assemblage or manipulation of facts that would enable one to trace two or more phases at once. Two 'tracings' seem inevitable if two aspects of evolution are to be seen. Furthermore, it seems that the story of the whole can be sensed, if at all, only in terms of its distinctive phases.

10. The analyses resulted in the recognition of one use of ideas not covered in the conclusions stated thus far. It seems clear that, *after two or more major ideas have been developed, one, for example,*

historical, and another geographic, the application of those two ideas in the solution of a given current problem tends to strengthen, through use, both types of understanding. It also seems clear, however, that there is a marked difference between (a) the use of a given body of experiences to develop either one of the major ideas, historical or geographic, and (b) the use of those ideas, once gained, to help, together with other ideas, in solving a current problem. One cannot make the latter use till he has definite ideas to bring to bear on the solution. He does not perforce gain mastery of the ideas by being shown how they may function if and when one has them. A variety of insights and abilities are needed for the satisfactory solution of most important problems of living. Mere analysis of those problems to demonstrate that certain major geographic ideas may enter into the solution of many of them does not, of itself, insure grasp of those ideas. The bodies of experience requisite to the development of each of those major ideas constitute, apparently, the only means of really acquiring them and the only avenue toward the ability to use them independently in one's own solution of such problems. *All knowledge is 'integrated' in its application, in that many types are useful in the solution of most major problems, but a prerequisite to such application is possession of the knowledge to apply.* Requisite to possession of such knowledge of various types are those bodies of experience through which the knowledge is developed. It would seem, accordingly, that only as a result of such experiences can there be gained the well-balanced, adequately rounded, apperceptive background of varied but definite types of insights that is needed in the satisfactory solution of life's problems.

4. Summary: The Curriculum in Diagrammatic Form

To summarize: in the light of analyses of distinctive offerings of the *past* in various fields, the curriculum designed for general education should provide for pupil experiences suited to develop the various types of insights, habits, and attitudes that contribute to well-rounded perspective. Such perspective involves the ability to view a problem intelligently from all important angles.

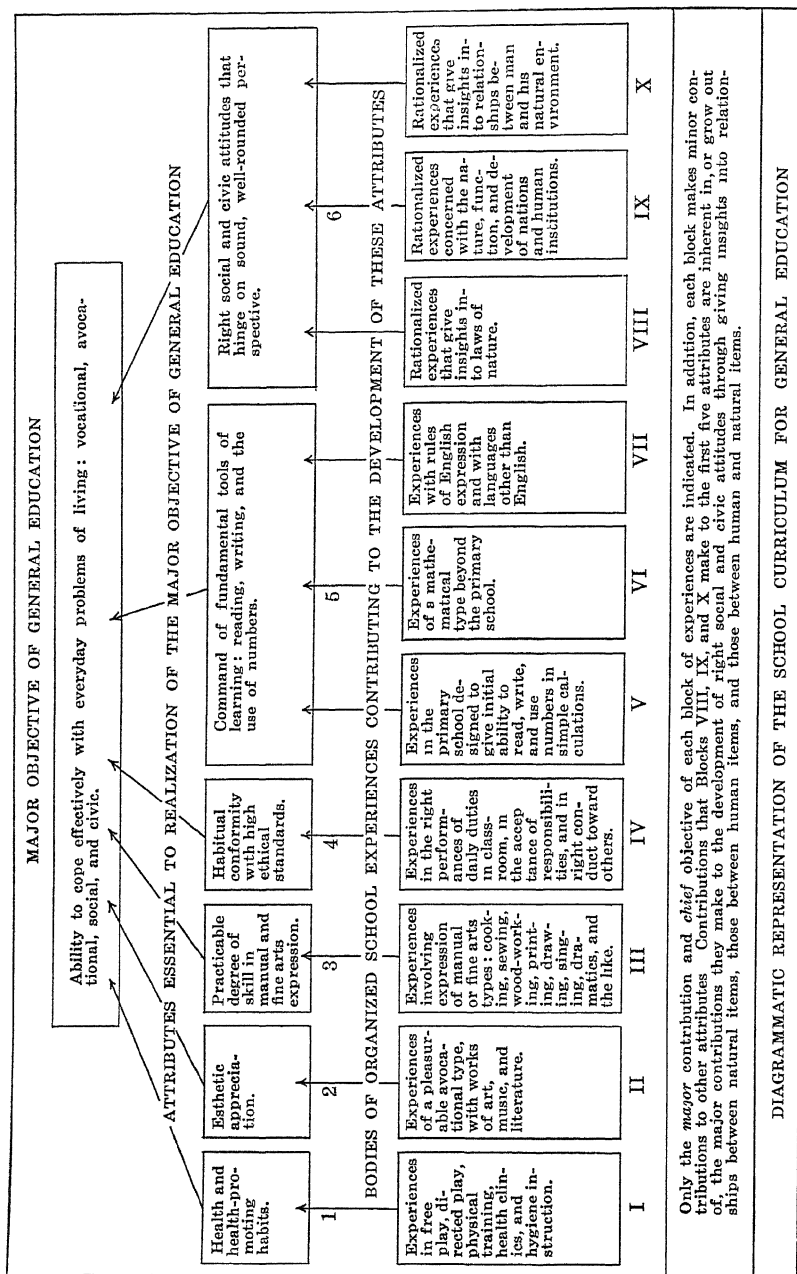
The whole curriculum seemingly might be indicated roughly in some such diagrammatic form as that presented in the accompanying diagram. In this diagram the relative size of the blocks is without significance; the relative importance of the various types of experi-

ence is not yet known. The tenth block symbolizes experiences that lead to geographic insights; the ninth, those whose ends are historical, economic, sociological, or civic, and other social insights; the eighth, those that result in insights developed in botany, chemistry, and other natural sciences.

The separate labelling of geographic and other experiences does not indicate that these experiences are to be presented only as separate courses. One might, in a given course, gain three major ideas leading to insights of type eight, five contributing to insights of the ninth type, and two, to those of the tenth type. Instead, a course of equal length might be devoted to the acquisition of ten major ideas of one type. It would seem, also, that, at late stages in general education, another sort of course might deal profitably with problems that give practice in applying the knowledge and skill derived from courses of the first two types indicated to the consideration of rather complex current affairs.

No findings lend support to the theory that the time required to provide experiences on which a given major idea is based is decreased by providing those experiences in such a 'variety' course as that indicated by the three-five-two grouping instead of in a course in which all major ideas developed are of the same type. Since the development of any given major idea seems to hinge on a particular group of facts manipulated in a specific way, it follows that it would take as long to introduce and so treat that body in one course as it would in any other at the same level. Accordingly, if a hundred ideas of a given type are to be developed in the period of general education, a hundred specific bodies of experience requisite to their development are involved, and there seems to be no ground for concluding that the total time required for those experiences is lessened by their distribution in variety courses.

Furthermore, it should be evident from the earlier discussion that the lines bounding various types of experiences in the diagram do not indicate a clear differentiation between the facts or individual items included in each type. Many facts are involved in two or in more of these types of experiences, and they belong equally to each. The bounding lines indicate, instead, given ways of combining and manipulating facts to develop specific types of insights, major ideas, and understandings that constitute what commonly have been known as 'subjects.'



It should be kept in mind, in studying the diagram, that it is designed merely to illustrate the conclusion, derived from the analyses made, as to the *general* relation of distinctively geographic ideas to the curriculum as a whole. If blocks other than the tenth are so labelled as to represent inadequately the types of experiences needed, the labels should be changed. Of course, separate blocks could have been drawn for each type of natural relationship insight (botanical, chemical, and the like), and for each type of cultural relationship insight (historical, economic and the like), as well as for the one cultural-natural relational type (geographic). These varied ideas were indicated as belonging to three blocks of experiences merely for the sake of fitting the diagram into small space. Since no value is to be attached to the size of any block, the general relation of geographic ideas to the curriculum as a whole would be the same whether the three general types of ideas were represented by three blocks or by ten or twelve.

The designation of the goal of general education and the determination of the attributes requisite to its attainment are felt to be the function, not of specialists, but of general educators. General curriculum-makers properly seek to reject all experiences that do not contribute to gaining these attributes and to retain only those that do. But the aggregate of human knowledge that might function in general education is so large that it is impossible for generalists to be sufficiently familiar with its range in every field to be able to select unerringly from each those particular understandings that can develop best the general attributes to be gained. Once given the attributes to be developed, the specialists, with intimate knowledge of their subjects, can discover, by painstaking analysis, all types of ideas and learning experiences that their specialties afford. Only those who possess such knowledge can select wisely the experiences that contribute best and most distinctively to the ends set by the generalists.

Moreover, since the techniques of teaching and learning that are distinctive in any given field correspond rather closely with methods of research therein, thorough knowledge of the latter is requisite to sound determination of distinctive teaching and learning techniques.

This point of view implies that it is not the function of geographic specialists to dictate how much geography should be included in the general curriculum, because this determination also is concerned with

values derived from various other types of training. On the other hand, it is their function, and not that of generalists, to show objectively the precise scope, nature, relative difficulty, and relative value for educational purposes of those ideas and learning experiences that are truly geographic, and to determine, in coöperation with generalists, the techniques that should be employed in geographic training. Accordingly, the remaining investigations reported in this chapter have to do chiefly with the determination of those experiences that are the more helpful ones in gaining insights of the type indicated in block ten of the diagram.

IV. EVALUATING CURRENT MATERIALS IN TERMS OF DISTINCTIVE GEOGRAPHIC OFFERINGS

1. Necessity of Such Evaluation

The next important question to be answered was: "Do courses of study, materials commonly used, and current classroom procedures in teaching geography put emphasis chiefly upon ideas and learning experiences that are distinctively geographic?" "If they do," the investigators reasoned, "one might well proceed next to the construction and demonstration of objective tests for the measurement of geographic achievements. The results would demonstrate conclusively what may be expected from such experiences. If they do not, then to find what has been achieved would be of little value in showing objectively what contributions distinctively geographic experiences make to general education." Only with the findings of such an analysis in hand could correlations be shown between the percentage of emphasis on truly geographic experiences and the degree to which geographic attainments result. If the analysis revealed little emphasis on distinctively geographic experiences, it seemed that those interested in developing the science of teaching geography might better turn their attention next to determining how to provide experiences all of which are in harmony with the major objective of the study. Then, by testing for results gained by pupils through these experiences, truths about the outcomes achieved through a well-rounded body of distinctively geographic experiences might be learned. In view of these considerations, the next investigation undertaken was that of evaluating material in terms of its distinctively geographic offerings.

2. Types of Studies Made

One evaluation study for distinctively geographic offerings, by Miss Velma Brown,¹ involved a classification of some 55,000 exercises in geography texts of recent decades. Miss Brown found that increase in emphasis on distinctively geographic ideas, though irregular, had been considerable during the period involved, but that, on the whole, emphasis on such ideas was much less than on isolated facts and on experiences of the memoriter rather than of the interpretive type. 'Emphasis' was estimated in this study and in others noted, in terms of the relative number of distinctively geographic ideas and learning experiences involved.

The analysis of forty-five state courses of study in geography and of sixty city courses showed that distinctively geographic ideas and experiences constituted less than fifteen percent of the total.

Reports of classroom observations made by 73 competent persons in 604 schools indicated that only 19 percent of the emphasis in the procedures observed had been put on real geographic training. Widely distributed cities were selected for both these studies in order to sample effectively.

After making detailed statistical analyses in several such studies, it became evident that careful inspection of the material would suffice in most cases for a valid conclusion concerning relative emphasis. Unless the emphasis was almost equally divided between truly 'geographic experiences,' as this report uses the term, and experiences of other types, one could see readily, without counting, what types received most stress. There was no practical point in knowing, in each case, the exact percentage, if the approximate situation was evident from inspection. Such careful inspection showed at once that tests, like other materials, put relatively little weight upon real geographic ideas.

There soon will be accessible the results of a study made at the University of Pittsburgh that will show statistically the relative amount of distinctively geographic material in current tests. There also are under way several other studies of this evaluative type. All such studies and all studies by the method of inspection have yielded similar results. Here and there stress is put largely on real geographic experiences, but by far the greatest amount seems still to be put upon other types. It should be noted that not only interpretive ideas of

¹ See Section VI, Chapter XXVIII, of this Yearbook.

relationships between man and his natural environment, but also all facts and relationship ideas used to contribute to them were classed in these analyses as 'geographic.'

3. Illustration of Technique Employed

To illustrate the technique employed in such an evaluation, an analysis of the New York High-School Examination, administered January 25, 1932, is presented, by courtesy of the University of the State of New York. The test follows:

Part I

Answer all questions in this part.

1. In the following sentences fill the blanks with the correct words:
(10)
 - a. The largest cities of the western hemisphere are located along the.....coast.
 - b. The island south of India noted for the production of tea is.....
 - c. The largest country in Europe is.....
 - d. Norway and Sweden are situated in the.....peninsula.
 - e. The most important river in northern Africa is the.....
 - f. The only one of the five Great Lakes that lies wholly within the United States is.....
 - g. The Strait of Magellan connects the.....ocean with theocean.
 - h. The principal seaport of the Philippine Islands is.....
 - i. The Laurentian highland is located in the eastern part of
 - j. The Mississippi delta is in the State of.....
2. In *each* of the following find the word or expression in parenthesis that makes a true statement and draw a line under it:
(10)
 - a. The principal grazing lands in the United States are called (the Great Plains, the Steppes, the Pampas).
 - b. The principal oyster fisheries along the Atlantic coast are in (the Gulf of St. Lawrence, Chesapeake Bay, the Hudson River).
 - c. Redwood forests are found in (California, Argentina, Florida.)
 - d. Large quantities of silver are mined in (the Netherlands, Mexico, Egypt).
 - e. A great rice-producing country is (New South Wales, Norway, Japan).

3. Draw a line under the word or expression in parenthesis that makes *each* statement true: (8)
 - a. The difference in longitude between two places that have a difference of three hours in time is (90° , 15° , 45°).
 - b. On December 21, the vertical rays of the sun shine on (the equator, the tropic of Capricorn, the tropic of Cancer).
 - c. The earth's orbit is (circular, elliptic, straight).
 - d. A country that has summer in January is (Alaska, Germany, Argentina).
4. Draw a line under the word or expression in parenthesis that makes *each* statement true: (6)
 - a. The spring equinox occurs in (April, May, March).
 - b. New York City has a more uniform climate than St. Louis because of (latitude, prevailing winds, nearness to a large body of water).
 - c. The wet monsoon winds carry moisture to the mainland from the (Indian, Atlantic, Pacific) ocean.
5. Draw a line under the word or expression in parenthesis that makes *each* statement true: (6)
 - a. The cheapest source of electric power is (oil, coal, water).
 - b. Dairying is carried on most extensively in (Wisconsin, Florida, California).
 - c. Beet sugar is extensively raised in (northern Africa, central Europe, western Australia).

Part II

Answer six questions from this part, selecting two questions from each group.

Group I

6. Give an account of the production of petroleum, naming:
 - a. *Two* sections of the United States that have large oil fields. (2)
 - b. *Two* foreign countries that have oil fields. (2)
 - c. *Two* methods of transporting oil. (2)
 - d. *Two* products obtained from petroleum. (2)
 - e. *One* important use for *each* of these petroleum products. (2)
7. Copy the following list of countries and write after *each* country the name of an important product that it produces: (10)

Chile	Egypt	Cuba	Sweden	Mexico
Japan	India	Germany	Ireland	Australia
8. Name a country or region that has little population on account of (a) extreme cold, (b) extreme heat, (c) lack of rainfall, (d) too much rainfall. (10) (*Four* different countries or regions should be named.)

Group II

9. Buffalo and Oswego are both lake ports, but Buffalo is much larger than Oswego. Give *two* reasons why Buffalo became larger than Oswego. (10)
10. Copy *each* of the following sentences, filling the blanks with words that make the statement true:
 - a. *Two* groups of mountains in New York State are..... and..... (2)
 - b. *Two* drainage systems of New York State are.....and (2)
 - c. *Two* mineral products of New York State are.....and (2)
 - d. *Two* important industries of New York State are.....and (2)
 - e. *Two* places of historic interest in New York State are..... and..... (2)
11. Name a city in New York State that is noted for the manufacture of (a) glass, (b) copper products, (c) leather goods, (d) locomotives, (e) men's clothing, (f) bricks, (g) rugs, (h) optical supplies, (i) office furniture, (j) meat products. (10)

Group III

12. a. Name *two* climatic factors that favor forest growth. (4)
- b. Name *one* extensive area in North America and one in Eurasia that have abundant forests. (2)
- c. State *two* reasons why forests should be conserved. (4)
13. Copy on your answer paper the names of the places of interest in column I; after *each* name write the name of the state (found in column II) in which the place of interest is situated. (10)

Column I

Mount Rainier
 Imperial Valley
 Old Faithful geyser
 The Everglades
 Mammoth Cave
 Pikes Peak
 Mount Washington
 Ausable Chasm
 Plymouth Rock
 Great Salt Lake

Column II

New Hampshire
 New York
 Massachusetts
 Utah
 Colorado
 Washington
 Wyoming
 California
 Florida
 Kentucky

14. Three methods of representing relief are shown by the maps below: hachures, shading and contour lines. Using the numbers that appear on the maps, indicate which of them represents re-

- lief by (a) shading (2), (b) hachures (2), (c) contour lines (2).
 A fourth method of expressing relief is by color layers.
 d. Does all the land represented by a particular color of a color-layer map have the same elevation? (2)
 e. How can you know the elevations of the lines bounding a color layer? (2)

[Maps were inserted here.]

In Table I, the items in the foregoing test are grouped in categories that enable one to differentiate (1) those that stress distinctively geographic ideas and those which do not, and (2) those which stress memory, those which stress tool-using ability, and those which stress reasoning, or interpretive ideas.

The word 'isolated' in three of the category titles indicates that in the test no distinctively geographic use was made of the fact, ability, or interpretive idea involved.

To illustrate, assume that an exercise called for (1) the chief work of a given area and (2) some way or ways in which natural conditions in the area are suitable for such work. The first item would be classified as a 'fact used geographically,' not as an 'isolated fact,' because it is used in the 'geographic relationship' idea called for in the second item. If, on the other hand, the first item were called for without the second one or another of similar nature, it would be classified as an 'isolated fact.'

Similarly, assume that an exercise calls (1) for reading from a map the fact that the southern part of a region contains more cities than the northern part, and (2) for reading from the map facts (for example, that the southern part of the region is relatively level, and the northern part mountainous) that help to explain the distribution of cities shown: in this case, the first item would be classified as 'tool ability used geographically,' because the fact read from the map is used in reasoning concerning a relationship between man and natural environment. The second item would be classified both under 'geographic relationships' and under 'tool ability used geographically,' because it calls for both. If, on the other hand, the first were called for without the second or some idea of similar nature, the former would be classified as an 'isolated tool ability.'

The same significance attaches to the word 'isolated' in the case of 'isolated natural relationships.' Assume, for example, that an exercise demands the reactions (1) that July in Argentina is a winter month because Argentina is in middle south latitude, and (2) that this fact helps to explain a given human item there (such as the June-August opera in Buenos Aires). The former would be classified as a 'natural relationship used geographically' and the latter as a 'geographic relationship' idea. If, on the other hand, the first item were presented without the second one or another fulfilling the same function, the former would be classified as an 'isolated natural relationship,'

which is an abbreviation of 'isolated relationship between two or more natural items.'

All exercises in categories containing the word 'isolated' in their titles fail, then, to emphasize geographic ideas. Their emphasis is, instead, on raw materials that are not made to function in geographic thinking. One may have possession of any or all raw materials without being able to reason geographically. On the other hand, by testing for geographic reasoning one inevitably tests for possession of the raw materials involved, because without them one cannot reason geographically.

Items labelled 'isolated facts' call merely for memory and *repetition*; those classified as 'isolated tool ability' call for the *ability* to get information from some specific source, such as a map; and those in the two other columns require reasoning, or the recognition or expression of *interpretive ideas*. Since only four types of exercises are found in the test, only four of the categories mentioned in the foregoing explanation are needed in this particular analysis.

TABLE I. CLASSIFICATION OF REACTIONS IN NEW YORK STATE TEST

Part	Exercise	All Reactions		Isolated Facts		Isolated Tool Ability		Isolated Natural Relationships		Geographic Relationships	
		No.	Score	No.	Score	No.	Score	No.	Score	No.	Score
I	1	10	10	10	10						
I	2	5	10	5	10						
I	3	4	8	2	4			2	4		
				(b+c)				(a+d)			
I	4	3	6	2	4			1	2		
				(a+c)							
I	5	3	6	3	6						
II	6	10	10	10	10						
II	7	10	10	10	10						
II	8	4	10							4	10
II	9	2	10							2	10
II	10	10	10	10	10						
II	11	10	10	10	10						
II	12	6	10	(b)2	2			(a)2	4	(c)2	4
II	13	10	10	10	10						
II	14	5	10			5	10				
Total		92	130	74	86	5	10	5	10	8	24

The evaluation of the examination in terms of percentages is complicated by the fact that optional combinations of exercises were to be made by individuals taking the test. Exercises 1, 2, 3, 4, and 5 were to enter into all com-

binations, but the following direction was given with regard to Part II: "Answer six questions from this part, selecting two questions from each group." Since each exercise, or 'question,' in Part II nets, if perfect reactions are made, a score of ten, the total score would be 100 regardless of which three were omitted. The number and type of reactions differ, however, with different combinations. Sixty-two reactions would be made if Exercises 6, 10, and 13 were omitted; sixty-seven, if 7, 11, and 14 were omitted; and eighty-one, if 8, 9, and 14 were omitted. Table II shows, in the case of each of the four optional combinations indicated, relative emphasis, in terms of score, upon isolated facts, isolated tool ability, isolated relationships between natural items, and geographic relationships. Other combinations would be possible, but those selected show the range of percentage possible in each type of emphasis.

TABLE II. EMPHASIS UPON FOUR TYPES OF ATTAINMENTS IN PERCENTAGES OF SCORES IN FOUR TEST COMBINATIONS

Types of Emphasis	Omitting 6, 10, 13	Omitting 7, 11, 14	Omitting 8, 9, 12	Omitting 8, 9, 14
Isolated Facts	56	66	84	86
Isolated Tool Ability	10	0	10	0
Isolated Natural Relationships	10	10	6	10
Geographic Relationships	24	24	0	4
Total	100	100	100	100

Table II shows that, according to the combination chosen, (1) emphasis upon distinctively geographic ideas varies from zero to 24 percent, while emphasis on ideas and ability not used geographically varies from 76 to 100 percent; (2) emphasis upon memorization and repetition of isolated facts varies from 56 to 86 percent; (3) emphasis upon ability to use tools varies from zero to 10 percent; and (4) emphasis upon reasoning or upon the recognition or expression of interpretive ideas varies from 6 to 34 percent.

The least objectionable combination is that omitting 6, 10, and 13, because it puts as much emphasis on distinctively geographic ideas as would any combination of the exercises presented; it puts less emphasis on mere memorization and repetition of facts than any other; and it puts as much emphasis on tool-using ability and as much on interpretive ideas as does any other. Even if the test be appraised in terms of this most valuable combination of exercises possible, less than one-fourth of the total emphasis is put upon geographic ideas or the geographic use of facts, abilities, and ideas of relationships between natural items. Only a little more than a third of the emphasis is put upon

interpretive ideas of any type, only a tenth upon the ability to get information from source materials, and more than half upon the mere memorization and repetition of isolated facts. It is possible, moreover, to select a combination of exercises that puts absolutely no stress upon any distinctively geographic idea or any geographic use of facts and abilities.

4. Conclusions

As a result of the numerous analyses that were made of materials and procedures, the technique of which is illustrated by the analysis just presented of the New York High-School Examination of 1932, it was concluded that testing by such devices in order to discover real geographic attainments would show merely that few of them had been realized. Few such attainments could be expected to come to light because of the relatively slight emphasis being put on real geographic experiences in such testing. To check the validity of this conclusion, tests were designed to measure certain specific results of the so-called geographic training children had received. The studies of Mr. Lord and Mrs. Hoppes¹ were concerned with such measurements.

The former showed conclusively that children at or near the end of their elementary study of geography in the Michigan schools represented had very little idea of the geographic significance of latitude and longitude, and very little ability to make use of facts about latitude and longitude in helping to interpret human items. It showed, furthermore, that the training received by these children had not been such as to enable them even to use the terms understandingly and to read accurately on maps data about latitude and longitude.

The investigation by Mrs. Hoppes was concerned with the ability of children to gain information from pictures and to use it in geographic interpretation. The results indicated considerable ability on the part of the children tested to get certain types of information from pictures, but slight knowledge of relationship between the human and natural features shown, and slight ability to use such knowledge in the geographic interpretation of the things observed. These findings were in harmony with the assumption that the scant emphasis on geographic thinking in the training provided would result in correspondingly scant ability to use information from various sources in gaining and using interpretive geographic ideas.

¹ See Section VI, Chapter XXVIII, of this Yearbook.

Considerable testing of a less formal type strengthened further the validity of the assumption. Miss Eisen, of Milwaukee, constructed a test based on the Lord test, for example, and reported findings similar to those of Mr. Lord. Numerous other teachers, in the course of their classroom work, conducted similar investigations informally and reported similar conclusions. As a result of such work, formal and informal, it seemed clear that further testing at that juncture would only multiply evidence that relatively few real geographic attainments result from experiences most of which are not distinctively geographic. It was concluded, accordingly, that the next pressing problem in the development of the science was the determination of the types of experiences constituting real geographic training at various levels of instruction.

V. DETERMINING ORGANIZING CORES

1. Methods Used

In planning the organization of geographic material in terms of real geographic outcomes, the first step was to determine the types of major ideas that constitute organizing cores. A distinctively geographic core idea is a generalization concerning human adjustments to natural environment derived from a group of geographic relational ideas. Two questions were to be answered in the determination: What types of such generalizations have been used as organizing cores? What other types, if any, might be so used effectively?

No new analysis was required to answer the first question, for the initial analysis of all types of ideas found in geographic literature had revealed major ideas as well as minor ones. One needed only to select from that list¹ all major ideas that were distinctively geographic. Types 13, 14, 15, and 16 meet this requirement.

The second question prompted the following analysis. Each distinctively geographic minor interpretive idea involves elements of three types: one or more human items, one or more natural items, and the location of the place or places where the relationship obtains. In grouping minor relationships for the derivation of generalizations, only as many types of grouping are possible as there are types of elements in the individual relationships. Unity is essential in any group in order to derive a generalization from it, and necessarily one of the three

¹ See Chapter VII, "List of Major Ideas."

elements involved in each relationship must be common to all in the group. An illustration of each of the types of grouping and generalization follow.

a. *First Type of Grouping.* Relationships may be so assembled that all those in a given group pertain to one region. In this case, the regional or location element is the 'unifier' and the generalization made by comparison of, and deduction from, the specific relationships is a statement of the major adjustments of man to natural environment that give that region a geographic 'personality,' 'individuality,' or 'character' distinguishing it from all other regions.

The phrase 'geographical personality' is technical, and so demands explanation in untechnical terms. Denmark, to illustrate, is a specific political region. The major understanding to be acquired concerning it is that of how the Danish people have adjusted themselves to their natural environment. This is just another way of saying that the major understanding is a comprehension of the geographical personality of Denmark. In setting forth the personality of a given *individual*, one describes those *characteristics* which are outstanding in his case, those which serve to distinguish him from other individuals, those which are of major importance in making him what he is. In setting forth the geographical personality of *region*, one describes the outstanding *adjustments* which its inhabitants have made to their natural environment, adjustments which serve to distinguish it from other regions, to give it a character of its own.¹

For example, from the specific relationships between human and natural items that exist in the Hawaiian Islands, one may generalize readily that in *fitting their lives to the kind of region in which they live, the people have made use of the tropical climate, rich soils, good harbors, interesting scenery, mid-Pacific location, and other natural resources of the islands to support a fairly dense population, native, oriental, Spanish, and American, chiefly by the production and sale of tropical agricultural products, and to a less extent by the coaling and repair of vessels on trans-Pacific routes and the entertainment of tourists.*

This is an illustration of the type of major idea numbered 13 in the original list and there entitled 'relationships between the complex of human elements in a specific region and the complex of natural elements existing in that region.'

Ideas of Type 14, labelled 'relationships between a complex of human elements in a specific region and the human and natural com-

¹ Parker, Edith P. "The nature of units in a course of study in geography." *Baltimore Bulletin of Education*, Vol. VIII, No. 3, p. 49.

plexes in a group of regions which have afforded bases for the development of that specific human complex,' also are derived from a group of relationships in which the regional element is the common, or unifying, item. Ideas of Type 14 differ from those of Type 13 in that one generalizes, in the former, on the basis of relationships that include those between human items in the region in question and the natural environment in other regions as well as in that one.

b. Second Type of Grouping. Relationships may be assembled so that each one in a given group deals with the same kind of cultural item, for example, with trade in raw silk.

In such a group would be included relationships between the export of raw silk from Japan and the natural conditions there that help to explain it; between the export of this commodity from China, Mediterranean lands, the Near East, and other regions producing it, and relevant natural conditions in those regions; between the import of raw silk into northeastern United States and other consuming regions and the natural conditions in those regions that help to explain the consumption there of this commodity; between the relative amounts of such exports from and such imports into the regions involved and the relative natural assets of those regions respectively for such activities; and between the methods of conducting the trade (carriers used, routes traversed, handling in shipping, insurance, and the like) and the nature of the commodity, the distances from exporting areas to importing areas, and the nature of the areas across which transport is effected. Many regions are represented and many types of natural conditions are involved, but some aspect of trade in raw silk is common to all relationships in the group. The generalization that can be derived concerning the relationship to natural environment of the outstanding facts about trade in raw silk that give that trade a 'personality,' 'individuality,' or 'character' distinguishing it from trade of other types is this: *The fact that trade in raw silk moves chiefly from Japan to northeastern United States by a sea-land route, in high-grade carriers, at relatively great expense, is explained in part by the cultural and natural assets of Japan, as compared with those of other exporting areas for the production of raw silk, by the cultural and natural assets of northeastern United States, as compared with other importing areas for the consumption of raw silk, by the nature of the commodity, and by the natural facilities for transport between producers and consumers.*

In some cases groupings of this kind make it possible to derive generalizations much like certain principles in the natural sciences.

For example, one may group relationships concerned with reasons for the development of large ocean ports at given places. The development of New Orleans is seen to be related in part to the advantages, for a trade terminal, of a site as far upstream as large ocean-going vessels can come. Similarly, the development of Boston is seen to be related to the fact that its

site is nearer the heart of the land area there served than any other that Boston Bay affords. In the cases of numerous other great ports, relationships between development and site are pointed out. In the light of this assemblage of relationships, this generalization may be made: *If bases for ocean-going trade exist in given areas, seaports tend to develop in those areas upon sites as near the heart of the immediate land areas served as any that ocean carriers can reach, because of the superior advantages, other things equal, that such sites afford for such trade.*

It is to be noted, however, that when generalizations of this kind are derived, they must be stated as tendencies, in order to be accurate. They differ, accordingly, from such a principle as "water seeks its own level." The difference is inherent in the elements involved. In every geographic relationship at least one element—the human one—is a variable. The fact that the will, judgment, and ability of human beings are factors in every adjustment of man to his natural environment necessitates the idea conveyed by "tendency" in accurate statements of geographic 'principles.' Furthermore, since no human activity or other human item is explained wholly by a single natural factor, statements of such tendencies as the one cited, to be accurate, must be qualified by some such phrases as 'other things equal.' Regardless of whether generalizations derived from groups of the second type discussed are 'personality' or 'principle' generalizations, they are major ideas of the type numbered 15 in the original list. They there are entitled 'relationships between a given type of human activity and human and natural complexes in a group of regions where this type of activity occurs.'

c. *Third Type of Grouping.* Relationships may be assembled so that each one in a given group deals with the same kind of natural factor—for example, with maturely dissected plateaus of considerable relief.

Specific relationships cited in this instance would be those between population, land utilization, transport, and other human patterns in various regions of this type and natural features and conditions characteristic of the topography of such regions. A generalization to be derived from such a group is: *In making adjustments to the topographic conditions that characterize maturely dissected plateaus, there is a tendency toward rather sparse settlement, the use in some cases of ridges and in other cases of valleys for the main avenues of land transport, the use of lower lands for agriculture of such types as may be suited to other natural conditions there, the utilization of higher slopes, if other conditions are satisfactory, for woodlands and grazing, and*

considerable isolation of interests on the part of communities separated by any formidable erosion remnants that may there exist.

This generalization illustrates ideas of Type 16 in the initial list: 'relationships between a given type of natural complex and human and natural complexes in a group of regions where this type of natural complex occurs.'

2. Findings

1. Since there can be no more unifying elements than there are types of elements involved in specific geographic relationships, and since generalizations can be derived only from groups of relationships in each of which there is a common element, there are only three types of grouping possible for the derivation of major ideas (organizing cores).

2. From such groupings there can be derived two distinct types of generalizations, which may be designated as the 'personality' type (with three sub-types) and the 'principle' type.

3. Generalizations of the 'personality' type include those concerned with the interpretation of (a) the human patterns that characterize specific regions, (b) the distribution of given human activities, their conduct, import, and other characteristics, and (c) the human items found in regions where given major types of natural factors, characterized by distinctive natural features and conditions, occur.

4. Generalizations of the 'principle' type differ from principles that involve constants, and, to be accurate, they must be qualified as 'tendencies' and so stated as to indicate that no single type of natural factor ever wholly explains any human item.

5. It is obvious that major, or core, ideas of 'personality' types may differ considerably in magnitude or comprehensiveness, with differences in the relative amount of variation within the regions involved, or with differences in the inclusiveness of the specific human items or the natural factors that serve as unifying elements in the groups of relational ideas requisite to the derivation of the generalizations.

VI. DETERMINING RELATIVE DIFFICULTY OF MAJOR IDEAS

1. Significance of the Problem

Having discovered the types of major ideas that constitute organizing centers in geography, it was essential to determine next the relative difficulty of these types. Without so doing, one could not apply

to the problem of the curriculum in geography the accepted principle of elementary teaching that one should proceed systematically from very simple ideas to more and more difficult ones.

2. Methods and Criteria

Two methods of determining the relative difficulty of major geographic ideas were employed. The one was subjective; the other objective. They were used in investigations conducted during the same period, but for the sake of clarity they are treated consecutively in this report. The subjective method involved (1) resolving major ideas into their component elements, (2) noting the nature of the apperceptive background that seems to be requisite to the acquisition of the latter, and (3) comparing, as to number, complexity, and degree of concreteness, the relevant concepts, facts, and relationships. The objective method was concerned with recording and diagnosing errors in pupil performance.

It seemed sound to assume that indexes to relative difficulty were (1) the number of lesser relational ideas involved in gaining major geographic ideas, (2) the relative complexity of the relationships needed in so doing, and (3) the relative concreteness or abstractness of the particular elements entering into those relationships. Analysis was made on this assumption, and one purpose of the error diagnosis was to prove or disprove the validity of this reasoning.

3. Subjective Analysis

To illustrate the subjective method employed there follows an analysis of the four major ideas previously cited in "Determining Organizing Cores."

First Example: Hawaiian Islands. The 'personality' generalization concerning the Hawaiian Islands involves the ideas that farming and selling farm products, repairing and coaling vessels, and entertaining tourists are outstanding activities there. Each of these activities is visualized readily with the aid of pictures and a simple description. There are concrete features in the landscape that exhibit each activity. One may see, for example, sugar cane, sugar-cane fields, workers in the fields, the types of tasks the workers perform, their homes, their clothing, the carriers used to transport cane, the sugar mills, the sugar ready for shipment, the ships on which it is sent away, and the act of transferring it from docks to ships. Concepts basic in the other activities indicated are equally concrete. Similarly, the natural features and conditions to be considered are readily visualized or sensed, because of their concreteness. For example, the nearly level surface of much of the

farm land, the mountains, the density and character of the natural vegetation, some of which suggests high temperatures and considerable rainfall, the difference in vegetation on windward and leeward slopes, the beauty of many of the landscapes, the volcanic peaks, and the harbors, all may be observed. If one can use understandingly the simplest type of map symbols, which are semi-pictorial in character, he can visualize the mid-Pacific location of the islands, and can sense their size in terms of known distances. It would seem, then, that the raw materials, in the form of concepts and facts, on which to base the relational ideas needed are so concrete that they are simple to acquire.

Number of Steps in Relationships. Before considering the relative complexity of the individual relational ideas involved, it should be noted that human activities and other cultural items may be labelled, for geographic purposes, as primary, secondary, tertiary, or yet more remote, according to the number of steps involved in tracing their connection with natural factors. Extractive industries (logging, farming, mining, fishing, hunting, and grazing) belong to the primary group. One reason for logging is the existence of forests where it is carried on; farming is explained in part by the slope of the land tilled, by the soils, by the amount of rainfall, by the length of the growing season, and by the temperatures during that season; people mine, of course, only where deposits of useful minerals are accessible. The geographic relationships just cited are all *one-step*, or *primary*, relationships.

Manufacturing and commerce, on the other hand, are 'secondary' industries. Manufacturing involves the use of raw materials. Natural factors that help to explain the production of those materials help in turn to explain their use in manufacture. The making of soap in Marseilles, for example, is accounted for in part by the production of olives near by because olive oil is one of the raw materials used in the soap; one reason, in turn, for raising olives in this region is the Mediterranean climate, which is characterized by long, dry, hot summers, and mild winters with moderate rainfall. The relationship between the manufacture of soap in Marseilles and the climatic conditions in the neighboring olive-producing districts obviously is a *two-step*, or secondary, relationship. Similarly, there are two steps in the relationship between the shipping of olive oil from that port and the climatic characteristics of the region in which the olives are grown.

To see how the shipping of a manufactured commodity is related to natural environment involves *three steps*, for (1) the shipping is based in part on the manufacturing, (2) the manufacturing is based in part on the production of the raw materials used in it, and (3) the production of raw materials is based in part on the natural factors suitable for it.

Four, five, six, seven, or even more steps are involved in tracing the relationships of some human items to natural environment. One element in the explanation of the production of large quantities of butter in Denmark is the export of much of it to England; one reason for that export is the large market for Danish butter in England; the large market for butter there is explained in part by the dense population of that country; the dense population is supported chiefly by manufacturing and by trade based in part on it;

one reason for the importance of manufacturing in England is the fact that the coal used for fuel in many of the factories is mined locally; and finally the mining of coal is based partly on rich deposits of accessible coal there. Six steps, then, comprise the geographic relationship which exists between butter production in Denmark and coal deposits in England. In this case most of the items are cultural.

Into some multi-step relationships one cultural and several natural items enter; into others several items of both types enter. The placing of an import duty by the United States on Danish butter is explained in part by the fact that butter is produced in large quantities in the United States, and the relationship of the latter may be traced, for example, to the distance of the butter-producing areas in the United States from the equator, through the intermediate items of (1) the rearing of dairy cattle, (2) land suitable for pastures and for supplemental fodder crops in those areas, and (3) temperatures and lengths of growing season in them. Three human items (import duty, butter production, and the rearing of dairy cattle) and three natural items (land suitable for pastures and cattle-fodder crops, seasonal and temperature conditions, and distance from the equator of butter-producing regions in the United States) are included in the chain of factors that joins an import duty on butter, the first link, to the latitude of butter-producing areas in the United States, the last link.

In weaving the concepts and facts noted concerning the Hawaiian Islands into interpretive geographic ideas, one sees relationship between

the use of much land for farming	and	considerable low and fairly level land (1)
		much fertile soil. (2)
		much rainfall, except to the leeward of mountains (3)
the use of much farm land for raising sugar cane	and	the nature of sugar cane. (4)
		the twelve-month growing season at low altitudes (5)
		tropical location (6)
		rainfall well distributed on the wind- ward side of mountains. (7)
		water for irrigation in certain drier areas (8)
the use of much farm land for rais- ing pineapples	and	the nature of the pineapple plant. . . (9)
		all conditions except (4) noted in con- nection with sugar cane. (10-13)
the use of some farm land for food crops to supply local needs	and	conditions (except 4) noted in connec- tion with sugar cane. (14-17)

the use of rather in- expensive clothing	and	temperature conditions noted in con- nection with farming	(18)
and shelter by many people		existence of forests from which build- ing material may be obtained	(19)
		beautiful scenery	(20)
		special volcanic features	(21)
the entertainment of tourists	and	climatic conditions noted	(22)
		location at a focus of trans-Pacific routes and in relatively low lati- tude	(23)
the coaling and re- pair of ships	and	good harbors	(24)
		location at a focus of trans-Pacific routes	(25)
the presence of 'oriental' and west- ern people	and	location between the 'east' and the 'west'	(26)

All these relationships are simple, not only because they involve concrete, readily visualized features or readily understood conditions, but also because they are one-step relationships (with the exception of those involving sub-tropical location). The location helps to explain the temperatures and seasons that in turn help to account for various human activities. Some other very simple two-step interpretive ideas are needed in gaining the major idea in question. The farming activities noted are links by which the work in sugar mills and canning factories and the sale of sugar and pineapples are related to the natural factors that help to explain the farming. On the other hand, the centering of such trade in Honolulu is linked directly with the harbor facilities there. Finally, two 'thought steps' are involved in seeing that the density of population is explained in part by all the conditions which help to account for the ways in which people earn their livings in the islands.

Since most of the interpretive ideas required for the derivation of the generalization in question relate to one-step relationships, and since the two-step ideas needed involve in each case merely the addition of another link to one-step reasons developed, they seem, as a group, relatively simple. Although some thirty or more relational ideas are required, it is to be noted that there is much repetition of the few natural items which enter into them. The group as a whole seems far less difficult to grasp than one in which each successive reason included natural items different from those in the preceding ones. In other words, the ideas are such that there is much 'carry-over' from one to others. The 'carry-over' in this case is so great that the thirty or more individual relationships seem to present no more difficulty than one would encounter in mastering some ten or twelve ideas involving unlike elements.

It seemed, then, by reason of the kinds of concepts, facts, and interpretive ideas needed as an apperceptive background for understanding the generaliza-

tion in question, that children in intermediate grades might be led to grasp this major idea without undue difficulty and to use it in later interpretation. This conclusion was made with the proviso, however, that materials presented to children in this connection be selected and introduced properly, and that effective guidance be afforded in the use of those materials toward that end.

Second Example: Trade in Raw Silk. The number of individual relationships needed to gain an accurate, functioning understanding of the major idea concerning international trade in raw silk exceeds the number needed for the first major idea diagnosed. In the case of Japan, for example, one needs to see the relation of trade, through production and methods of production, to competitive uses of the land, standard of living, topography, temperatures, rainfall, latitude, and the location of producing areas with regard to trade centers. Reasons for the concentration of the trade in specific ports indicate relationships between the handling of silk there and the cultural and natural facilities of the harbors and port sites involved. A similar group of understandings is needed for each of the other regions that export raw silk. While there is considerable carry-over of ideas from one to another of these regions, it differs from that cited in the first analysis. In the Hawaiian group of relationships, the same complex of cultural and natural factors was involved throughout. In this case, though somewhat similar natural and cultural complexes are involved, no two of the regions have identical personality complexes, and the differences are significant in explaining various aspects of the distribution and conduct of the silk trade. Wrong impressions may be implanted readily through indiscriminate carry-over.

A group of some ten or twelve individual geographic relationships also is needed in the case of each of the importing regions, and another group is needed to deal with relationships between the routes followed and relevant natural conditions in areas across which transport is effected. Without presenting all the individual relationships involved, it will be clear that, in view of the number of regions concerned, the number of individual relationships required exceeds considerably the number basic in the acquisition of the major idea noted concerning the Hawaiian Islands.

Trade in raw silk is a 'secondary' activity. As pointed out in the discussion of the derivation of a major idea to be gained about it, this item or some aspect of it is common to all the relationship ideas from which the generalization is deduced. With these two facts in mind, it becomes obvious that there are no one-step interpretive ideas involved. Every relationship in the group consists of at least two steps, and a considerable number of them are multi-step ideas. For example, the fact that raw silk is imported in great quantities into northeastern United States is related to the large market there for luxuries, one of which is silk cloth. The demand for such a product is explained in part by the fact that the region contains many persons with large per capita buying power. The support of many persons there on the plane which such a power indicates is related to the numerous activities in which they engage to earn a living. These activities, finally, are related, in some cases through several links, to the natural resources, there and elsewhere,

upon which they in part are based. The fact that part of the output of the silk mills goes to people elsewhere calls for the introduction of another chain of similar items. From the standpoint of the relative complexity of the individual relationships requisite to gaining the major idea about trade in raw silk, that idea is more difficult, therefore, than the one about the Hawaiian Islands which was first analyzed.

Many of the facts and concepts involved in the relationship ideas needed for the trade understanding under discussion are concrete and readily gained. There also are involved, however, such items as marine insurance, capital, transportation costs, the cost of production as related through cost of labor to standard of living, processes of conditioning and rating, of buying and selling, of management and manipulation, the relative immobility of some of the labor employed in manufacture, which is associated with localization of demand, and the like. Obviously, such ideas as risk, capital, standard of living, and labor (in its generalized sense) are very abstract as compared with ideas of raising pineapples, coaling vessels, and caring for tourists. Since the geographic relationships concerned with the distribution and conduct of trade in raw silk cannot be shown without the use of such ideas, it follows that the raw materials basic in the derivation of the generalization cited about that trade are of a higher order of difficulty than those needed for gaining the major idea noted concerning the Hawaiian Islands.

It seemed clear, moreover, that, unless one has a background of major ideas about the geographic personalities of the countries engaged in that trade, misconceptions concerning those countries might result from the group of relationships needed for the major trade idea. Those dealing with Japan, for example, stress chiefly the one human activity, trade in raw silk. While many facts, cultural and natural, about Japan necessarily are introduced, they all are treated in terms of their relation to this single activity. This centering of attention on a single phase of the geographic personality of the country tends to give a warped impression of it, unless ideas of other major adjustments that characterize it have been acquired previously. Such warping makes for educational waste, the waste involved in the unteaching needed if care is taken later to eradicate the misconception. If such correction is not effected, wrong thinking concerning many problems relating to Japan inevitably is promoted. If, on the other hand, personality understandings of the regions involved in the trade discussion are gained before the group of facts leading to the trade generalization is presented, the danger of the type of misconception noted is minimized. Furthermore, if major ideas of regional personality constitute part of the apperceptive background brought to gaining the trade idea, many ideas of relationship between the production of raw silk and relevant cultural and natural conditions and also many relationships dealing with consumption already would have been grasped. If such need only to be recalled and applied, instead of having to be developed *de novo* at this juncture, a greater proportion of attention may be given to the new links in the relationship chains that are being forged and trade interpretation, the center of interest, can thus be thrown into stronger relief. It seemed, then, that numerous

major ideas of the Hawaiian Island personality type are prerequisites for a satisfactory understanding of the silk-trade idea, an understanding which does not breed false impressions of the countries engaged in the trade.

Finally, in view of the number and complexity of the concepts, facts, and relationship ideas needed for gaining the major trade idea in question, it seemed clear that the difficulty of the idea is comparatively great, and that it is not suited, for example, to the abilities of children in intermediate grades.

Third Example: Port Development. The case of the geographic principle noted concerning port development resembles closely that of the trade generalization. The commerce that is fundamental in port development is a 'secondary' activity; many regions are involved; many of the ideas needed comprise multi-step relationships; and the danger of misconceptions is present if major ideas of regional geographic personalities are not a part of the apprehensive background of the learner. However, fewer terms of a rather abstract nature are required than in the case of the trade idea. Accordingly, it seemed that the port idea is less difficult than the trade idea, but more difficult, on the other hand, than the first major idea analyzed.

Fourth Example: Maturely Dissected Plateaus. Resolving into its elements the major idea of human adjustments to maturely dissected plateaus of considerable relief, one notes at once the comparative complexity of the phrase used to characterize the type of topography with which the idea is concerned. Of the concepts needed for an understanding of the phrase, 'plateau' probably is the least difficult one to acquire. The idea of 'considerable relief' may be gained almost as readily. 'Dissection,' however, is not clear to one who does not understand the degradational work of running water, and does not have concepts of valleys of various ages (young, mature, and old), valley features characterizing each age or stage, ideas of the relation of such features to the associated stream pattern, and ideas in turn of the relation of that pattern to amount of rainfall, to distribution of rainfall (areally and in time), to the slopes of valley beds, and to the comparative resistance of the material subjected to erosion. 'Maturity of dissection' is the most complex of the thought elements involved. To understand the term 'maturity' in this connection, one must have concepts of the 'complexes' of topographic features which characterize each of the several stages of an 'erosion cycle,' must be able to distinguish between valley maturity and maturity of dissection, and must be able to recognize various sub-types of complexes included among those labelled broadly as 'mature.'

In view of the complexity of the type of topography with which the major idea in question is concerned, understanding the relationship of even a primary human activity to this topographic complex involves multi-step ideas. For example, the use of considerable areas for timber in many regions where such topographic conditions exist is explained in part by the fact that much land in these regions is too steep to be suitable for farming. This fact is related to the present stage of dissection of those areas. The stage of dissection is associated with the stage of development of the stream patterns, in turn accounted for in large part by the duration of the periods during which they

have been developing, the rainfall, and the structure and character of the materials subjected to erosion. The number of steps in the relationship ideas concerned with secondary human items, or with those even further removed from direct contact with the natural environment, is of course larger than the number taken in understanding how primary industries are related to the topographic complex with which the major understanding deals.

The regions to be treated in gaining the understanding include all those characterized by such a topographic complex. It is unnecessary to have as a background for the major understanding under discussion all the details of the topography of each of those regions, but an understanding of those features needed for the realization of outstanding similarities and differences in the topography of the various areas is requisite. Surface is exactly alike in no two such areas, and human adjustments in them differ also with differences in the people and in natural factors other than topography. Carry-over, therefore, must be exercised with much caution to prevent inaccuracy of thought. Moreover, there is inherent, in the group of ideas involved, a danger of the type noted in connection with the trade group—that of gaining misconceptions of the geographic personalities of countries in which there are maturely dissected plateaus, unless the appropriate personality ideas are possessed before the generalization is derived.

In view of the foregoing considerations, it was concluded that the major idea concerned with human adjustments to maturely dissected plateaus of considerable relief probably is of somewhat greater difficulty than the major trade idea analyzed. The concepts and ideas needed are relatively numerous; some of the terms and concepts are technical in character; the interpretive ideas involved are multi-step ideas; and, in order to guard against misconceptions, various major ideas of country or regional personalities are essential elements in the apperceptive background requisite for the acquisition and accurate use of the idea.

Many ideas of each of the three types defined in "Determining Organizing Cores" were resolved into their elements in the manner illustrated in these four examples. Comparison of those analyses led to the following conclusions:

1. All major ideas belonging to the least difficult group are those of the regional personality type that deal with a single cultural-natural complex.

2. Not all regional personality generalizations, however, belong to the least difficult group. Such ideas are of varying grades of difficulty, and no major geographic idea is more difficult than the most complex ideas of this type.

3. All major ideas of the second type (whether 'activity personality' ideas or 'principles') are of greater difficulty than the simpler regional personality understandings. In the case of each, the apper-

ceptive background requisite to its accurate application includes some major ideas of the regional personality type.

4. All major ideas of the third type (concerning human adjustments to given types of natural factors or complexes) also are of greater difficulty than the simpler regional personality understandings. In the case of each, the apperceptive background requisite to its accurate application includes some major ideas of the regional personality type. On the whole, ideas of this type probably are somewhat more difficult than those of the second type, though there are exceptions to this generalization.

5. Not all understandings of any given type are of equal difficulty; there are those of varying grades of difficulty in each.

Since only one regional personality understanding has been discussed in detail, there has been presented no concrete evidence of the kind found for the second and fifth of the foregoing conclusions. Illustrations of further analysis employed in reaching those conclusions are presented next.

Analysis of the types of generalizations which can be made about the outstanding adjustments of man to natural environment in different regions showed that there are at least three elements in the situation which make for differences in the difficulty of such major ideas. (1) In the case of a given region, there may be gained personality understandings of varying depth. (2) Understandings of the same depth about two regions may differ in difficulty because adjustments in one are relatively homogeneous, while in the other there is much diversity or heterogeneity. (3) In two regions of homogeneous adjustments the outstanding adjustments in one may be those that can be understood in terms of relatively simple one-step or two-step relationships, while those that give individuality to the other can be understood only in terms of a considerable number of more complex geographic relationships. Illustrations and discussion of each of these three types of variation follow.

With regard to the *first type of variation*—variation in the depth of the understanding one gains about the geographic character, individuality, or personality of a region—understandings of regions may be compared with those of persons. A very young child can sense enough of the personality of various individuals to enable him to identify those persons readily, although he has no ‘deep’ understanding of them. He merely recognizes that they have particular complexes of relatively obvious characteristics such as height, coloring, gruffness, pleasantness, and the like. He understands and generalizes

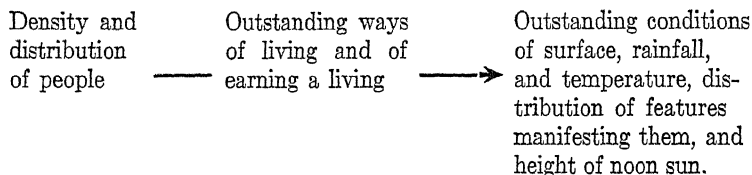
correctly as far as his capacity to penetrate or 'see into' the matter permits, but his 'depth' of understanding or insight is limited by his inability to sense the less obvious traits. As he has more experience with people, and as his capacity to sense less obvious traits develops, he gains more insight into, or 'deeper' understanding of, their personalities. Similarly, in the case of regions, the relationships to natural environment of some types of human items that help to characterize them are understood as readily as the more obvious traits of an individual. Other relationships, on the other hand, correspond to the more abstract traits of individuals. The farther one 'sees into' the geographic personality of a region in terms of such relationships, the greater is his 'depth' of understanding of it. It becomes essential, accordingly, to discover what types of adjustments of man to his natural environment are understood most readily, and what types can be understood only in terms of comparatively complex or abstract relational ideas.

Features of the landscape of a region, both cultural and natural, are observed as readily as are the facial features, height, and coloring of a person. They indicate the chief ways in which people in the region are earning a living, some of the ways in which they live (their houses, clothing, and means of travel, for example), and some of the natural conditions that help to explain the cultural items observed. If the region is one in which the activities indicated by the landscape features are to be explained in large measure by conditions which are readily observable in that region, in terms of simple one-step or two-step relationships, one may gain from such relationships a simple major idea of the personality of that region concerned with the outstanding types of work, food, clothing, shelter, and travel, on the one hand, and on the other hand, the outstanding natural conditions. It is to be noted that the major idea itself involves only one 'thought step.' To illustrate, the Amazon region is one in which people are fitting their work, food, houses, clothing, and ways of travel to a fairly level land of many forests and streams, much rainfall, a year long 'summer,' and a noon sun which is never very far from overhead. Such an understanding is not deep, for it is concerned only with the more obvious relationships. In showing the relative depth of various understandings of given regions, it is helpful to express the different grades of major ideas in a semi-diagrammatic form which shows the number of thought steps in each. The simplest type, just illustrated, may be indicated as follows, using the arrow to mean "are explained in part by," or a synonymous phrase.¹

Chief work, kinds of food, clothing, shelter, and means of travel	→	Outstanding conditions of surface, rainfall, temperature, and height of noonday sun.
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¹ The form of expression used for the sake of comparison of difficulty is not the form in which such ideas should be presented initially to children. Such a form serves merely adult purposes of analysis and should not be confused with the form in which such ideas are to be phrased for children to grasp.

Ideas of population distribution or of the pattern of land utilization are somewhat more difficult to grasp than the idea of the kinds of work done, because they are slightly more abstract and more inclusive. They always involve ideas of ways of making a living and ways of living, which are the only types of cultural items in the simplest grade of understanding. Furthermore, the acquisition of ideas of the distribution of cultural or natural features necessitates the use of map symbols of greater difficulty than any needed for the simplest type of major idea discussed. Distribution of people, rainfall, and so on, is expressed on maps by such symbols as dots, color bands, and color spots, which are more abstract in character than semi-pictorial symbols. Ability to use such symbols is based in turn on ability to use semi-pictorial symbols effectively. In semi-diagrammatic form, major understandings that involve such distribution ideas may be indicated as follows:¹



In the case of the Amazon region, the personality understanding of this second grade of intensity might be expressed, for example, in the following way: *The Amazon region is one in which sparseness of population and the uneven distribution of population are explained in part by the fact that most of its people live and earn their livings in ways which are suited to an almost level land of many streams and vast forests, where rainfall is heavy and is distributed fairly evenly throughout the year, where it is always 'summer,' and where the noon sun never is very far from the zenith.* The distribution element in this personality understanding is the more abstract item which differentiates it in depth from the simpler one cited.

A personality element which may be used to illustrate greater abstractness than that presented by the distribution of people or rainfall concerns the relative importance in world affairs of Amazonia. The idea of relative importance cannot be grasped as readily as the distribution of people and rainfall, for example, in part because it cannot be presented as simply with the aid of maps, and in part because it is based on numerous lesser ideas and comparisons. Semi-diagrammatically, major ideas of this order of depth resolve themselves into some such form as the following:

¹ The dash in this case indicates relationship between two types of human items, while the arrow is reserved for the thought step which traces those items in turn to natural factors.

Relative im- portance of the region in world affairs	Density and distribution of people, standard of living, cultural assets of the people as com- pared with those of other regions	Outstanding ways of living and of making a living and the distribu- tion of various types of work; their distribu- tion as com- pared with such items in other regions	Outstanding natural factors and their dis- tribution as compared with those of other regions
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Obviously such an understanding is deeper than the second one cited because such elements of the personality as relative importance, standard of living, and the cultural assets of the people involved are taken into account as well as facts of distribution and kinds of work. The major idea, moreover, not only is based on more relationship ideas, but itself also involves at least three thought steps. For personality understandings of this order, furthermore, simple personality understandings of other regions are needed for the requisite comparisons.

Other levels might be illustrated, but the three that have been considered serve to show the kinds of elements which make for differences in depth. It is obvious that after one has acquired major ideas in considerable number of the types exemplified by those noted concerning trade in raw silk and human adjustments to maturely dissected plateaus, he has many relationship ideas of a complex nature to bring to bear on a regional personality understanding. He then sees in the Amazon region, for example, such relationships as those between certain activities and relative humidity, convectional air currents, permanent high and low pressure areas, diurnal temperature range, absolute maximal and minimal temperatures, and the relation of the distribution of such climatic characteristics, through sun behavior, to the form of the earth, the inclination and parallelism of its axis, and its motions. All geographic relational ideas, however complex, serve in turn to deepen regional personality understandings.

The *second type of variation* that makes for differences in the difficulty of regional personality understandings has to do with relative homogeneity. The Amazon region is homogeneous in that throughout the area the outstanding types of geographic adjustment are alike. A personality understanding of Brazil, on the other hand, involves several regions differing in their outstanding adjustments. The population pattern of the country as a whole differs from that of any part. It is characterized chiefly by concentration of people in the eastern part of the country and especially in what is known as East Central Brazil. Though certain regions are well developed, the country as a whole is characterized by relatively slight development of its natural resources. Though forest-collecting is one of the outstanding adjustments in Amazonia, it is not,

by comparison with those made elsewhere in terms of number of people supported, value of product resulting, and value of trade based thereon, an outstanding one for the country as a whole, which is characterized in this respect chiefly by agriculture of a tropical character and by trade based for the most part on it. While the outstanding elements in the various human patterns as a whole differ markedly from those in the individual human-use regions that together comprise the country, the larger pattern can be interpreted only in terms of the relationships that obtain in the various regions and in terms, further, of the reasons for the differences. Such an understanding involves, then, a group of understandings of the various human-use regions comprising the country. Understandings of Brazil, just as of Amazonia, one human-use region in Brazil, may vary in depth, but whatever the depth of the understanding, it is of a higher level of difficulty because it is based on a group of understandings of the Amazonia type. The personality of a human-use region is less difficult to understand, other things equal, than that of an area embracing two or more such regions.

The *third type of variation* that makes for difficulty in regional personality understandings has to do with the nature of the outstanding adjustments. If the adjustments that are dominant involve chiefly primary activities, for example, then most of the relationships are of the one-step type. If, on the other hand, the region is characterized by a dominance of trade and manufacturing, as is Britain, then most of the geographic relationships involved must be those traced through two or more steps. If people in a given region have cultural assets much like those of people in one's own locality, noting those assets in explaining geographic adjustments presents little or no difficulty. By reason of one's own experience, they seem normal and, accordingly, to be taken for granted. On the other hand, if people possess traits that differ notably from those of people with whom one is familiar—traits, moreover, that affect the methods employed by the people in utilizing natural resources—an element of difficulty is introduced into the explanation of their methods. Thus the interpretation of agricultural adjustments in China necessitates the introduction of the idea of ancestor worship as an attitude common in that country. In regions where no such attitude exists, no such factor is involved in explaining agricultural adjustments. Finally, the simplest interpretation that it is possible to make of some activities, without giving misconceptions of the adjustments they manifest, includes numerous relationships of that activity to natural environment in other regions. To try to interpret the Danish dairy industry in terms only of cultural and natural conditions in Denmark leaves a wrong impression of the adjustments it represents because this industry depends to a great extent on conditions in other countries. On the other hand, the Norwegian dairy industry may be understood in terms of relationships between that activity and cultural and natural conditions in Norway.

To summarize and combine the various differences noted, it may be stated that the conclusions reached through such analyses of the

relative difficulty of various regional personality understandings were the following:

1. The lowest order of difficulty is represented by understandings, in terms merely of relationships of types of work and ways of living to outstanding natural features and conditions, of homogeneous regions, characterized by activities related, chiefly by one-step ideas, to the immediate natural environment.

2. The next order of difficulty is represented by understandings, in terms of relationships of population pattern, through types of work and ways of living, to outstanding natural features and conditions, of homogeneous regions characterized by activities related directly for the most part to immediate natural environment.

3. Higher levels of difficulty are represented by (a) understandings in terms of relationships of more abstract human items, such as political rank, through population pattern, and, in turn, through types of work and ways of living, to outstanding natural features and conditions; (b) understandings of regions not homogeneous; (c) understandings of regions characterized chiefly, from the human use standpoint, by secondary or more remote human items; (d) understandings of regions characterized by activities related in large part to natural conditions and features outside those regions; and (e) understandings of regions in terms of relationships which involve a grasp of terms such as 'maturity of dissection,' 'glacial erosion,' 'insolation,' 'cost of production,' 'standard of living,' 'mobility of labor,' and the like, as links in multi-link geographic relational chains.

4. Objective Studies

Classroom errors, which afforded, as noted, a second basis for the determination of relative difficulty of geographic interpretive ideas, were traced to their sources through interviews with pupils who committed them. Failures to perform tasks set and omissions were counted 'errors,' as well as definite mistakes. To show the technique used, the analysis of the first two hundred errors recorded in the course of the investigation is here discussed. These mistakes were made by pupils in two classes, a sixth-grade group and a seventh-grade group. All significant geographic errors made by the 58 children in these groups were recorded until 200 errors had accumulated and the children had been interviewed concerning them. At that juncture the errors and

interviews were examined to group them according to *types* of sources to which the errors had been traced.

The following stenographic reports of interviews are quoted as representative. In the dialogues, 'I' is the investigator, and 'P' the pupil.

- I. You say that probably you would put on lighter weight clothing at the Tropic of Cancer, where you pass from the temperate to the torrid zone on this trip. Tell me why you think this would be a suitable thing to do.
- P. The temperate zone is cooler than the torrid zone.
- I. But what makes you think the change in temperature takes place at this line?
- P. The map of zones.
- I. (Looking at the map) The map doesn't show how warm it is just north of the tropic and just south of it.
- P. Well, it is pink north of the line, and yellow south of it. Why do they change the color there if that isn't the place where it changes from warmer to cooler?

Obviously, the source of this error was not inability to reason concerning the simple relation between clothing and temperature, but misconception of the meaning of the color bands on a zone map and of the lines which separate them.

- I. Why do you think it probably would require more fuel to furnish power to propel a steamer from Cologne to Bingen than from Bingen to Cologne?
- P. The boat would be going downstream from Cologne to Bingen.
- I. Show me the sign for the mouth of the Rhine River on the map. (Pupil points correctly to the mouth.)
- I. Which is nearer the mouth, Bingen or Cologne?
- P. Cologne.
- I. Is the water in the river, then, flowing from Bingen to Cologne, or from Cologne to Bingen?
- P. I think it flows from Cologne to Bingen.

Again, it was clear from this interview that the child in question understood the relation involved, but that he was unable to tell the direction of flow from a map symbol of a northward-flowing river.

- I. You omitted the question about one reason the picture suggested for building sod houses in this region. Do you not see that sod is a material that could be obtained easily there?
- P. I don't know what sod is. I looked for something to build with, and couldn't find it.

The comment "I looked for something to build with" showed clearly that the child was doing relational thinking and would have experienced no difficulty in stating the interpretive idea if he had not lacked the concept 'sod.'

Other significant comments made by pupils in interviews concerning other errors were: "Cattle are smaller than cows, larger than sheep, have slick coats, and are spotted." "Going 'by water' means going 'alongside' or 'by the edge of' a body of water." "North winds are those blowing from south to north."

All the errors traced to their sources through the interviews noted thus far had to do with one-step relational ideas. It is significant that in no case did those interviews reveal difficulty in grasping the interpretive idea involved. In each case the difficulty had arisen from incorrect concepts or lack of concepts of the meaning of simple map symbols or of such terms as 'cattle,' 'by water,' and 'north winds.' Of all the errors involved in the one-step relational thinking, only one was not traceable to wrong concepts or to lack of concepts of the types represented in the foregoing group or to wrong ideas of an interpretive type that will be shown presently. In one case not included in the two groups mentioned the pupil himself named the source of error, carelessness. He had no difficulty in understanding the relation and had adequate apperceptive background for so doing.

In some cases, wrong ideas used in one-step thinking about relations were traced to wrong interpretive ideas instead of to misconceptions of the types illustrated in the preceding comments.

To illustrate, pupils in the sixth-grade group in question were examining a physical map of Asia in order merely to note the location of Siberia, which they were to study next. One lad volunteered the idea that agriculture probably was the chief work throughout the area. Of course, the map should not have suggested such a probability, and, although no inference concerning probable work had been asked for, the investigator was interested in discovering the basis for such erroneous thinking. Accordingly, the following discussion, in essence, ensued:

I. Why do you think you would find farming the chief work throughout Siberia?

P. Because the map shows that most of it is a great plain.

I. How many of you think that farming would be the chief work throughout the region?

(Twenty-three of the thirty-one pupils raised their hands.)

I. Is farming the chief work in all plains?

P. Yes.

I. What makes you think so?

P. The first book says so. We learned it in the fourth grade.

I. Can you bring the book to show me?

P. Yes.

The next day the book was produced, and a general discussion of the use of plains for agriculture was indicated. It did not say, of course, that all plains are so utilized. It told of ways in which plains, plateaus, and mountains differ. The few relational ideas introduced had to do with relief, or surface. In other words, the discussion in the book represented an attempt to give in simple form an understanding of the third type of major idea discussed in earlier sections of this report—an idea of ways in which activities are related to one type of natural factor. It had been presented before children had gained simple regional personality understandings. They had not brought to bear on the statements there made major ideas of certain mountainous and plateau regions in which farming is one of the outstanding types of work or major ideas of certain great plains where farming is not one of the typical activities. They had not seen that farming is related to many types of natural factors, of which surface is only one, as they would have done in gaining regional personality understandings. The danger that had been recognized as probable in the subjective analysis was objectified. Without these understandings of simple regional complexes, the major idea gained from that discussion had been based on insufficient data and was erroneous.

It proved difficult, moreover, to correct this misimpression and a similar one traceable to the same type of source, namely, the idea that all minerals are found in mountains and that wherever there are mountains mining may be expected. It required much teaching time that otherwise might have been spent on Siberia to provide sufficient experiences with farming regions and mining regions to eradicate the erroneous relational ideas held by the children. Much waste in teaching and learning were traceable to failure to give simple regional personality understandings before presenting more difficult ideas for which such understandings were needed if further misconceptions were to be avoided.

Though twenty-three pupils had, by assenting to the contention of their classmate, made the error just mentioned (about Siberian agriculture), this was counted as only one of the two hundred errors. Seventy-four of the total number, however, were traced to attempts to introduce generalizations of Types Two and Three¹ before relevant regional personality ideas of simple character had been established as part of the learning background. Those seventy-four errors all were committed in exploratory exercises on various regions introduced for study, and each of them demanded much 'unteaching.' Some of them involved one-step relational ideas; others, ideas of more than one step. It was estimated roughly that *fully half the time devoted to geography in the case of the sixth and seventh grades concerned was consumed in trying to undo the results of erroneous interpretive ideas acquired*

¹ See earlier in this chapter: V. "Determining Organizing Cores," 1: a, b, c.

earlier. Finding the major source of this waste, then, was of much significance. •

Not a single region was introduced to either class about which some error of this type was not made. Much time was spent in getting tea off most of the surface of India, for example. The idea that India was characterized chiefly by the raising of tea was traced to a treatment of tea in a discussion of food in the fourth grade. The only way in which India entered into that material had to do with tea, and with natural conditions in tea-growing regions. Forthwith India had come to mean tea and those conditions to the children.

Similarly, South America meant rubber and rubber-gathering Indians to most of the seventh grade group. In order to convince those pupils of their error in supposing that only such Indians live in South America, the investigator resorted finally to photographs of government officials of South American countries, of a cellist from Brazil, a Chilean poet, an Argentine pianist, and the like. Even statistics showing what a small part of the trade of Brazil consists of rubber were questioned by them, so strong was the idea they had gained from a premature attempt to generalize about rubber. Furthermore, it should be noted that, instead of contributing to insights into the lives of people of other lands in such a way as to breed a sympathetic understanding of them, misconceptions of the type noted in connection with South America had tended to make the children 'look down' upon those peoples. It was clear, time after time, that failure to introduce simple regional personality understandings before introducing major ideas of Types Two and Three had been not only ineffective and wasteful, but also positively harmful.

Seventy-six of the two hundred errors constituted a group represented typically by the fifteen following.

- (1) Southernmost South America is the warmest part of the continent.
- (2) The south pole is the warmest place in the world.
- (3) Antarctic waters are too warm for whales, seals, and other such animals.
- (4) Growing seasons near Buenos Aires are longer than those at Rio de Janeiro.
- (5) Near the equator there are spring, summer, autumn, and winter seasons.
- (6) One should expect to find temperature conditions in Tasmania excellent for banana culture.
- (7) June is a summer month in Chile, and December a winter month.
- (8) People in Capetown who wish to escape the warmest season there would choose to go elsewhere during June and July.
- (9) In Argentina, corn is harvested at about the same time it is harvested in the United States.
- (10) In Patagonia, sheep shearing probably takes place in May or June.
- (11) No crops or trees can grow north of the Arctic Circle. Lands there are always covered with ice or snow.
- (12) In all places north of the Arctic Circle, there is continuous daylight for six months and continuous darkness for six months.

- (13) The best time for exploring Antarctica is in June and July, because then there is more daylight there than at other times of the year.
- (14) In northern Europe daylight periods are shorter throughout the year than they are in southern Europe.
- (15) At home, and in all other lands, the sun is directly overhead at noon.

Errors of this type were traced to mistaken ideas of simple relationships between human activities and outstanding natural conditions which differ with distance from the equator. This world understanding, in turn, hinges on simple geographic personality understandings of regions at various distances from the equator, since it is itself a major idea belonging to Type Three. This group of errors differs from the previous group in that all the errors had to do with two-step interpretive ideas (the relationship of some activity to a natural condition, which in turn was related to distance and direction from the equator). The type of source to which all were traced was similar to the type to which the preceding group was traced in that an inadequate background of major ideas concerning the geographic personalities of regions was involved, but it differed in that a simple major world understanding, based in turn on those ideas, also was involved in each case. Findings concerning sources of this group of errors showed, then, something more than the subjective analysis; namely, that a relatively simple world understanding, based on simple regional personality understandings, was one of the elements of thought in an apperceptive background necessary for clear understanding of numerous two-step relational ideas concerned with latitude.

All the remaining errors in the group of two hundred under discussion had to do with two-step or more-than-two-step relationships and were traced (1) to lack of understanding of terms, such as 'density,' 'average,' and 'distribution,' or to misinterpretation of map symbols (not semi-pictorial, but more abstract) that indicate such items, or (2) to difficulty that some children experienced in thinking through a relationship involving several steps. For example, the erroneous conclusion by one child that population density was greatest in the interior of South America and that it was explained in part by distance from the coast was traced to a misconception of the term 'density,' and failure to sense the meaning of a given number of people to a square mile.

The most common type of error in this group, however, was that of failure to trace both steps of a given relationship. Children when

asked to show how certain natural features helped to explain population density in a given region indicated only how those features helped to explain certain types of work there, without in turn showing what those kinds of work had to do with the number of people in the region. In some cases, the other step in the relationship was traced without showing in turn how the work and natural features were related. In each case, it was the slower members of the group who exhibited difficulty with the multi-step interpretive ideas. Even these children, however, gave no evidence of difficulty in grasping the one-step ideas if they possessed the concepts that were elements in them. This fact tended to substantiate the conclusion reached through subjective analysis that the number of steps in an interpretive idea is an element in its relative difficulty.

The major results of the diagnosis of the two hundred errors may be summarized as follows:

1. Nine percent of them, all of which had to do with one-step relational ideas, were traced to mistaken concepts or lack of concepts of simple features or of symbols representing them on maps. Failure to understand simple map symbols was responsible for twice as many errors of this group as were other misconceptions.

2. Three percent (one error having to do with a one-step relationship, and five with relationships of two or more steps) were traced to carelessness.

3. Thirteen percent of the errors, all 26 of which were involved in two-step or more remote relationships, were traced to difficulty with such terms as 'distribution,' 'density,' 'standard of living,' and 'political importance,' or to difficulty in showing all the steps in the chain of thought.

4. Thirty-seven per cent (37 errors relating to one-step ideas, and 37 relating to ideas of two or more steps) were traced to earlier and premature generalizations of Types Two and Three made with inadequate understandings of regional personality ideas.

5. Thirty-eight percent of the errors, all 76 of which related to interpretive ideas of more than one step, were traced to earlier and premature world generalizations concerning the significance of latitude, and to inadequate simple regional personality understandings.

All these findings were in harmony with the conclusions concerning difficulty that had been made by subjective analysis. They tended to

substantiate the idea that, *in order to prevent teaching waste, simple regional personality ideas, involving, for the most part, one-step relationships, should be presented before those involving longer relationship chains and more abstract ideas, such as 'distribution,' and that major ideas of Types Two and Three are breeders of misconceptions unless preceded by simple regional personality ideas.* Since the latter are essential elements in the background needed for the former, Types Two and Three are of greater difficulty than the simpler regional ideas.

In addition, since almost two-fifths of the two hundred mistakes hinged on a mistaken world understanding, the analysis of errors points clearly to the advisability of gaining, as early as practicable, a simple world geographic personality idea—that of how human activities vary with differences in natural features and conditions at different distances from the equator.

Error studies of the type here indicated have been going forward at intervals since this first study was made, and others are in progress. Percentages differ of course, with different classes, but the general proportion of types and sources is similar in all. Thus far all findings from objective studies have tended to substantiate the validity of the conclusions reached through subjective analysis of the types of ideas and concepts involved.

In addition to diagnosing such classroom errors as chance to occur, *formal tests* have been based on some of the errors in an effort to discover what particular mistaken concepts were evidenced with greatest frequency. In the use of semi-pictorial map symbols, less difficulty seemingly is experienced with river, coast, and city symbols, for example, than with complexes of symbols that represent peninsulas, straits, and the like. There is no given symbol differing from other symbols for such a feature as a peninsula. One recognizes a peninsula only by recognizing a particular type of complex of land, coast, and water symbols. Inability to read direction of stream flow from a symbol for a river is an error of high frequency, even among the college students tested. The frequency of this error on the part of high-school students is evidenced by the fact that percentages of pupils committing it ranged from 31 to 43 in 11 classes tested recently. The results of such testing apparently show that *nothing can be taken for granted concerning ability to read correctly even simple map symbols.* The greatest number of errors occur, however, in the use of the map network—parallels and meridians. To illustrate, a recent experiment con-

ducted with 283 normal-school students was based on a map on which a point labelled E was four degrees north of the equator. Fourteen percent of the students tested said E was *east* of the equator. Mr. Lord's study, reviewed elsewhere in the Yearbook, shows how little the children he tested had learned of the significance of the map network in reading direction, distance, latitude, and longitude.

Much remains to be done in studying errors, but enough has been done to establish the desirability of very careful gradation in the difficulty of major and minor ideas to be presented in geography and the necessity, if waste is to be avoided, of laying correct foundations in terms of the concepts needed in any given relational idea before expecting children to grasp the relational idea itself.

CHAPTER IX

INVESTIGATING MISCELLANEOUS ASPECTS OF THE TEACHING OF GEOGRAPHY

EDITH PUTNAM PARKER

The ideas presented in Chapters VII and VIII afford a background for understanding the following condensed accounts of miscellaneous representative studies and for seeing the relation of each study reported to the whole process of developing the science of teaching geography.

I. INVESTIGATING GRADE PLACEMENT IN TERMS OF COMPREHENSION

Purpose. To discover at what level or levels children can comprehend major geographic ideas of given types.

Sample Problem. Can fourth-grade children comprehend a group of the simplest type of regional personality understandings and a world personality idea of the simplest type based on them?

Sources of Data. Results of presenting material (so selected and organized as to furnish what was thought to be adequate apperceptive background for these ideas) to two fourth-grade classes, one consisting of children of fairly high intelligence quotients, the other of children of low intelligence quotients.

Findings. All pupils except three in the lower group evidenced ability to grasp the ideas and apply them correctly to new situations.

Major Conclusions (from this and similar experiments with other fourth-grade groups). The fact, revealed by error diagnosis, that a large percentage of upper-grade children had not acquired earlier the simplest type of world understanding was due, not to incomprehensibility of the idea at fourth-grade level, but to failure, on the one hand, to provide them with an adequate apperceptive background and to the introduction, on the other hand, of abstract ideas that were not needed.

Critical factors in providing pupil experiences which give an adequate background for gaining these ideas are:

1. the selection of a group of regions characterized by activities related very simply to the local natural environment;
2. the inclusion in the group of at least one region near the equator, one in low latitude but not equatorial, three in middle latitude (low middle, inter-

- mediate middle, and high middle), two in high latitude (one polar and one sub-polar), all in the northern hemisphere, or all in the southern; and one region in middle or high latitude in the opposite hemisphere;
3. the treatment of these regions in an order that makes for continuity of 'travel experiences,' chiefly along north-south lines, and that provides for transition 'journeys' between non-contiguous regions in order to insure ideas of gradual change;
 4. the provision in connection with each region of concrete imagery of the cultural and natural features or conditions that are elements in the simple relational ideas to be developed;
 5. such an introduction of every new map or globe symbol used as will insure proper visualization of the features symbolized or an understanding of the conditions symbolized;
 6. in connection with an adequate number of the regions, experience relating to activities that are explained in part by length of seasons, the time at which given seasons occur, length of day, and the position of the sun at noon;
 7. avoidance of zone maps and of any procedures that implant ideas of abrupt change instead of correct ideas of gradual change;
 8. avoidance of all abstract terms and map symbols, such as 'parallels,' 'meridians,' 'latitude,' and 'longitude.' (Explanations of lengths of seasons, day and night, and the like, are not needed at this level. The child has no difficulty in grasping the idea that summers decrease in length, and that summer days and winter nights increase in length as one goes poleward from the equator, and this helps him to explain why many human activities differ with distance from the equator. He does not need the reasons for the differences. Diagrams of the earth or of the solar system that are designed to show the causes of day and night and of the seasons make for confusion in this connection.)

II. STUDIES OF SOCIAL IMPORT

Purpose. To determine the relative social import of various types of major geographic ideas.

A Sample Problem. Are regional personality understandings of European countries of greater or of less value to the average American citizen than regional personality understandings of South American countries?

Sources of Data. The number of references to European and South American countries in current newspapers and periodicals, and in texts in other subjects; volume of American foreign trade with Europe and South America; volume of American tourist business in Europe and South America; number of Americans of European birth or descent, as compared with that of Americans of South American birth or descent;

number of American consuls in Europe, as compared with the number in South America; number of American customs, such as use of the English language, fashions, methods of work, and the like, that are derived from Europe, as compared with the number derived from South America.

Finding. By every count, American citizens as a whole have far more points of contact with Europeans than with South Americans.

Conclusion. Knowledge of the geographic personalities of European countries is of greater importance than knowledge of the geographic personalities of South American countries. Accordingly, it would seem that Europe and South America should be so introduced and treated in a program of geographic training as to give considerably greater emphasis to the former than to the latter.

A Second Sample Problem. Is knowledge of the geographic personalities of countries of greater or of less importance to the average American citizen than knowledge of the geographic personalities of regions of other types?

Definition of Terms. Regions may be delineated in various ways. Thus, there are political regions (countries or lesser political units, such as counties, townships, and provinces), topographic regions (those within which topographic features are homogeneous), climatic regions (those characterized by similar climatic conditions throughout), natural regions (those characterized throughout by a given complex of natural features and conditions), human-use regions (those characterized throughout by a given complex of human activities), areal unit regions (a ten-mile square, for example), and so on. A region is merely an area within given bounds. The geographic personality of any region of any type can be determined by discovering what outstanding adjustments of man to natural environment characterize it.

Sources of Data. The number of references to various types of regions in current newspapers and magazines, and in texts in other subjects; types of regions used in classifying statistical material in such sources as the *Statesman's Yearbook*; types of regions with which tourists are concerned in matters of passports, moneys, import duties, and the like; types of regions a knowledge of which contributes most to understandings of foreign-born peoples within our borders; types of regions with which government activities (treaties, boundary regula-

tions, trade agreements, consular services, tariffs, and the like) 'are chiefly concerned.

Findings. By all counts countries are the regions with which most of the problems of American citizens that involve other regions are concerned.

Conclusion. Material used in elementary geography should be organized chiefly in terms of regional personality understandings of countries.

III. STATISTICAL STUDIES BASIC IN SELECTING MATERIAL FOR SPECIFIC REGIONAL UNITS

Purpose. To determine, as criteria for the selection of material in any given regional unit, the essential elements to be stressed in giving a correct personality understanding of the region.

A Sample Problem. What are the essential elements in the simplest personality understanding of Japan that can be gained without leaving misconceptions of the country?

Sources of Data. Official statistics concerning number of people in Japan; area occupied by them; relative density of population in various parts of the country; percentage, distribution, and density of rural population; percentage and distribution of urban population; percentage of people engaged in farming, fishing, logging, mining, grazing, manufacturing, commerce, and other work; percentage of land area utilized in the conduct of each of these types of work; relative value of output from each of the types of work; percentage of 'waste land'; percentages of land in cultivation used for crops of various kinds; percentages of stock of various types; percentages of output of goods of specific types of manufacturing; percentages of trade based on specific commodities; average yields of farm lands; average size of farms; average number of persons supported per farm; standard of living as revealed by such facts as per capita costs of food, clothing, and shelter of commonly used types, percentage of illiterate people, ratio between number of schools and other institutions and number of people, and average wages; evidences of Japan's rank as a political power; changes in adjustments; emigration; and evidences of wealth or poverty in significant natural resources.

Findings. Comparisons of the statistics indicated about cultural and natural items show that the country is characterized by seeming geographical inconsistencies, such as the following:

Only a small percentage of the land is cultivable, but agriculture is the main support of the people. In spite of the very small amount of farm land per capita, the import of food per capita is small. A relatively large percentage of the land is such as to suggest its utility in the pastoral industry, but grazing ranks low among the kinds of work pursued. In spite of many natural assets for trade, somewhat like those of Britain, the country has been a trader only in recent decades. Without any such commercial momentum as Britain gained through centuries, Japanese trade has grown by leaps and bounds in recent decades. This growth has occurred, moreover, without the discovery of any of those natural resources that in some cases have afforded material bases for changing adjustments. Concurrently with the rapid development of trade, a rapid growth in manufacturing of the machine type has taken place, although the home supply of fuel is not abundant as in Britain, and raw material is imported for the chief manufacture, that of cotton goods, and only in the relatively recent past have the people become acquainted with machine work. In spite of small area, of the low standard of living of most of its people, of rather meager natural assets, and of a long past with almost no foreign contacts, the political rank of the country is high. Lands in Hokkaido fit for use remain little developed, while Japanese emigrants in large numbers seek homes elsewhere.

Conclusions. Obviously, such exceptions to the common correlations between types of cultural and natural items call for elements of understanding other than those which may be observed readily.

These elements consist, for the most part, of relatively abstract characteristics on the part of the people making the adjustments. Since farming is the outstanding activity, it should be stressed most in depicting the geographic personality of the region. At first thought, it would seem, therefore, that most of the relationships involved would be simple. Such thinking, however, fails to take into account the fact that farming in Japan is of a special type, characterized by *very intensive* use of the cultivable land, and conducted in ways understandable only in terms of *low labor costs, a low standard of living, and a peculiar human factor—self-imposed isolation*, as well as in terms of the more readily recognizable factors of climate and topography. Manufacturing and trade, also so outstanding as to deserve much emphasis, involve, of course, *multi-step relationships* and the same human characteristics that are so important in connection with the agriculture of the country. The slight development of the pastoral industry is related in part to *religious beliefs*, and changes in adjustments in recent decades have hinged upon *changes in the attitude of the nation and upon its adoption of the equipment and methods of a contrasting civilization*. The child who sees in Japan only the simple relationships that obtain there between man and his natural environment does not see the keynotes of Japan's geographic personality.

Realizing that the outstanding elements in the personality of Japan involve items which are italicized in the preceding paragraph, one sees the necessity of including, in the materials designed to give even an elementary under-

standing of that personality, items that will introduce such ideas to the child effectively. In turn, the fact that such materials and ideas are needed indicates that the outstanding adjustments in this country cannot be characterized in any such simple generalization as the one concerning Amazonia (p. 134). Japan, accordingly, is not a suitable region to choose as one of a group of regional units leading to acquisitions of the simplest type of world personality understanding.

Similar analyses of the geographic personalities of 'home' localities in the United States revealed that in almost all cases the major ideas involved are of the second level of difficulty, because many of the activities characteristic of these localities are related to conditions in other localities, and many relational ideas of two or more steps are involved.

IV. STUDIES CONCERNING TYPES OF PRESENTATION

Purpose. To discover the relative merit of various types of organization of material and the relation of various types of material to steps in the development of major geographic ideas.

A Sample Problem. Assuming, in harmony with general teaching rules, that it is desirable for a pupil to see at the outset of the study of a region the specific major goal to be reached, which of the following initial procedures is the best?

(1) To tell children at the outset of their study of Amazonia, for example, that this is a land in which people are fitting their ways of living to, or coping with, continuous summer, abundant rainfall, many streams, dense forests, days and nights of almost equal length, and a high noonday sun; to demonstrate the generalization with illustrative relationships; and to leave the children to intensify, round out, or assimilate the idea by finding further illustrations and by showing their relation to the major idea.

(2) To tell children at the outset of their study of this region that it is a land where people wear little clothing, travel chiefly by river in steamers or dugouts, build houses of light-weight materials, such as branches and leaves, slope the roofs, and so on; to leave them with the problem 'Why do people in this land live in these ways?'; and to guide them to find reasons and to make the generalization.

(3) To give children directions that lead them to find for themselves, from pictures, appropriate textual material, and maps, major facts that either give them the type of survey indicated in (1) or lead them to raise the problem indicated in (2).

Sources of Data. The results of experimenting with these three types of plans in the presentation of ten units to two fourth-grade classes, three units in the first way, three in the second way, and four in the third way. Of the last named four, two were of the survey type, and two of the problem type. All other procedures throughout the units were practically the same, so that the only variable was the method of attack and such differences in the assimilative or solution stage as differences in the type of introduction necessitated.

Findings. In the case of each procedure, an effective grasp of the major understanding was evidenced. The more capable pupils consistently displayed a preference for the problem procedure. In two of the five instances in which the survey type was begun, children interrupted the presentation with the request, "Let us find out why they do these things from the reading." The slower pupils, on the other hand, seemed to progress less slowly when the whole of the major idea was given and demonstrated. To both the weaker and stronger pupils, Type 3 appealed much more than Types 1 and 2.

After the first presentation of Type 3 (the third of the ten units presented), some of the pupils showed resentment at being told what people did in a region and in what kind of place they did it, instead of being allowed to find for themselves, from pictures and maps, all they could about it.

Finally, though the major idea apparently was grasped equally well from the three types of procedure, a considerably greater gain in ability to use tools was made and a greater independence in study was shown when the presentation was active, as in Type 3, rather than passive, as in Types 1 and 2.

Conclusions. Most facts needed, both for raising a problem, as in 2, or for a survey, as in 1, are those that children can readily get for themselves from pictures, maps, and simple written statements. To tell them these facts is to deprive them of an opportunity to make use of source materials and achieve the gain in skills and independence that comes through such use. Type 3, then, is richer in worthwhile results in geographic units than Types 1 and 2. Since procedures of Type 3 (1) aided some pupils, but were resented by others, it seemed that it probably would be best, as in the experiments with Type 3, to introduce some units by means of surveys and others by means of problems.

V. SAMPLE EXPERIMENTS IN THE USE OF TOOLS

1. A Representative Picture Experiment

Conclusions reached through experimentation with motion pictures as a source of information in geographic training include the following:

1. The moving picture, if it shows scenes of significance to the geographer, if it is not so captioned as to deprive pupils of the opportunity to read the landscape for themselves, and if proper guidance be given in its use, is valuable in giving (1) an initial survey, (2) a summary survey which may be so used as to constitute an effective test, and (3) concepts of work in which movement is an important factor.

2. The motion picture is of slight value for the intensive study of landscapes. Only in cases where continuity and movement are important does its value exceed that of prints or other still pictures.

3. Effective guidance in the use of motion pictures for geographic purposes involves directing the attention of the children to those elements in the pictures that are of significance in the development of the geographic theme in hand.

2. A Representative Map Experiment

A sixth-grade child contended that all London is north of the Thames, although the symbol for the city on the map before him showed clearly that part of it is on the south side of the river. It was discovered that he was not reading the symbol at all, but merely its caption (the name). The incident suggested an experiment, the purpose of which was to determine whether or not this is a common kind of error, and, if so, how it may be prevented. A hypothetical map was constructed on which there were eight city symbols, each on a river. In four cases, the name of the city was printed on the same side of the river as that on which the city symbol was entered. In each of the other cases, the symbol was on one side of the river, and the name on the opposite side. The names north, east, south, and west were printed on the map to eliminate any difficulty that might arise from inability to read direction. The test consisted merely of asking children to list the cities and state on which side of the river each one was. Six months elapsed between the construction of the test and its administration. Meanwhile, two fourth-grade classes had been using some maps on which the symbols were not named. Their meanings were discussed in descriptive material accompanying the maps. The

facts read from the maps had to involve attention, therefore, to the symbols. The test was administered to 116 children in Grades IV to VII.

In Grade IV, 3 percent of the reactions were incorrect; in Grade V, 31 percent; in Grade VI, 28 percent; and in Grade VII, 22 percent. Ninety-six percent of the errors related to symbols the names of which were on the opposite sides of the rivers from the symbols. Conclusions were that (1) approximately a fourth of the children in the upper grades tested tended to read names instead of symbols, and (2) the procedure followed with the fourth grade was one means of preventing the formation of this habit.

3. A Representative Reading Experiment

Is reading from several or many sources desirable in connection with a unit in elementary geography, and, if so, at what juncture?

Units were organized that provided for the use of several texts and readers immediately following the survey or problem-raising exercises. Others of similar difficulty in other respects were so organized as to make use at this juncture of mimeographed material in which were assembled the ideas scattered through these various sources. Both procedures, it should be noted, provided for equally 'wide' reading. It was merely a matter of using scattered or assembled reading, equal in scope.

Variety of style, difference in point of attack, the breaks in thought that came from going from book to book, and the difficulty children encountered in selecting and assembling items from here, there, and elsewhere, tended to hamper them in gaining a thorough understanding of the main point at issue. On the other hand, the assembling of pertinent material for them into a single source aided them materially in mastering the major idea and the minor ones on which it was based. They then evidenced power to read widely from various sources without confusion, and to 'see into' what they read by reason of the firm grasp they had of the core idea.

The conclusions were (1) *that teachers should distinguish sharply between 'wide' reading and reading 'from a variety of sources';* (2) *that material of a given scope is used by children much more effectively in assembled form than in scattered form, prior to mastery of the main idea;* and (3) *that reading from varied sources is done most effectively, in geographic units, after such mastery* (keen pleasure is then derived

from power to see its import and the danger of confusion from variety of style, approach, and the like, is slight).

4. A Representative Experiment with Graphic Material

Is it desirable to use pictorial graphs with units of varied size or with units of the same size?

The investigation of this problem was prompted by the reaction of a sixth-grade child to a pictorial graph in which a small cow symbolized the number of cattle in one country and a large cow the greater number in another country. The child's interpretation was to the effect that the first country specialized in calves and the second one in cows! Investigation showed that similar mistakes were made not infrequently by other pupils in interpreting graph units that varied in two dimensions. France, for example, was thought to use larger bags for wheat than does Spain. Furthermore, variation in more than one dimension precludes accurate quantitative comparisons except in terms of accompanying verbal or statistical matter. The symbol itself does not suffice for the very comparison that is the major function of graphs.

Pictorial graph symbols are effective with young children, and one cannot 'vary' cows and the like in only one dimension without making the graph ludicrous. The use of one cow picture to symbolize the number of cattle in one region, and of seven, each of the same size as the first one, to symbolize seven times that number in another region prevented misconceptions and provided a better basis for quantitative comparison.

VI. EXPERIMENTS CONCERNED WITH TIME REQUIREMENTS

The Problem. How long does it take to give children experiences that insure that they will understand the geographic personality of a region? It was recognized at the outset that it is possible to assign to a region any amount of time and to adjust the treatment of it to that time. The question, accordingly, was not 'How fast can ground be covered?' but rather 'How fast can it be covered with real understanding on the part of the children?' It was assumed that real understanding is manifested when a child (1) can state effectively in his own words the outstanding human facts about the region in question that are involved in an understanding appropriately deep, (2) can tell how outstanding natural facts help to explain the human items, and (3) can recognize indications of similar relationships in other regions. It was obvious that the time required would vary with (1)

the depth of the understanding to be gained, (2) the relative difficulty of ideas of the same intensity, (3) the amount of transfer from earlier units concerned with similar conditions, and (4) the abilities and knowledge constituting the apperceptive background of the children involved.

Findings. The average time required in Grades IV, V, VI, and VII for units of given types was found to be as follows:

Grade	Regional Personality Understandings	Apperceptive Background	Average Time per Unit
	Type Nature		
IV	1 Those of least depth concerning such regions as Amazonia (Only outstanding types of activities and of natural factors stressed)	Standard fourth-grade achievement in reading and expression	3.6 weeks ¹
V	2 Those of the second level of depth concerning human-use regions in the United States (Distributions stressed)	Eight understandings of Type 1 and simplest world understanding based thereon	2.9 weeks (Range from 5.2 weeks to 0.8 week, according to region)
VI	3 Those of the third level of depth concerning such countries as France or equivalent groups of countries, such as the Balkans (Human-use regional understandings and somewhat abstract human items involved, but stress chiefly on internal relationships)	Same as preceding, with additional understanding of the United States, based on eleven human-use regional personality understandings	2.1 weeks (Range from average of 3.6 weeks for countries such as France to one week for regions, such as the Balkans, involving much carry over)
VII	4 Those of the fourth level of depth concerning such countries as Mexico, French Africa, or equivalent groups of countries, such as those of Central America (The more abstract element of dual cultures, political control by peoples from other regions, and many external relationships involved)	Same as preceding, with additional personality understandings of sixteen countries in Europe and Asia	3 weeks

¹ A week means five 40-minute periods.

In this experiment, the range in time required to give various groups of major ideas was found to be as follows:

1. From 30 to 35 weeks were required in the Grade IV for giving experiences leading to 8 understandings of Type 1, and to a world personality understanding of the simplest type based on them.

2. From 31 to 38 weeks were required in Grade V for giving experiences leading to 11 understandings of Type 2, and to a climax understanding, of the same intensity, of the geographic personality of the United States.

3. From 33 to 39 weeks were required in Grade VI for giving experiences leading to 16 understandings of Type 3, and to a climax understanding, of the same intensity, of the geographic personality of Eurasia.

4. From 31 to 38 weeks were required in Grade VII for giving experiences leading to 10 understandings of Type 4, and to climax understandings, of the same intensity, of outstanding relationships between the world-population, human-use, country, and political-sphere patterns, on the one hand, and the world natural-environmental pattern, on the other.

Data for higher grades are not in hand, though data for Grade X probably will be available in a few more months.

Since the classes used in this experiment numbered only four in Grade IV, six in Grade V, twelve in Grade VI, and eight in Grade VII, the averages and ranges presented are only roughly indicative of time requirements. However, the similarity of findings concerning different units of the same general type tends to strengthen the validity of the findings as approximations of the truth. The facts that 424 unit presentations, in all, were involved and that it took six years to secure the data show why findings of this type accumulate slowly.

VII. A SAMPLE STUDY OF CURRENT OPINION

Problem. What is the character of current opinion concerning the content of 'home geography'?

Findings. Varied opinions are held concerning the meaning and content of home geography. The term is used to designate at least these six things: (1) a mass of facts about the home neighborhood, including everything from the kinds of butterflies one may observe there to the need of the community for fire protection and the method of acquiring books from the public library: any facts, in short, that

might be included under a topic 'Our Community' as distinguished from a unit; (2) a group of miscellaneous facts about food, clothing, and shelter in various parts of the world, with few or no geographic relationships; (3) a study of the home localities of various peoples; (4) a group of nature facts and observations concerning weather, seasons, how a stream is formed, and the like; (5) a group of nature facts and observations of the foregoing type, associated with facts and observations of human activities related thereto, involving such ideas as reasons for canning tomatoes in the autumn, but with no attempt to delineate the outstanding cultural features of the locality or to gain an idea of its geographic personality; and (6) a group of cultural and natural facts about the home locality used to develop geographic relational ideas that are made in turn to contribute to an accurate idea, of a depth appropriate to the comprehensibility of the children involved, of the geographic personality of the region.

Only the sixth of these types of material constitutes that selected in terms of the real geography of a home locality. The fifth properly may be termed 'Minor, isolated, geographic experiences,' but it is not 'geography' in the sense that those experiences are inclusive enough to furnish an adequate background for rationalization concerning the geographic personality of the locality or region.

Those who use the term 'home geography' in the third and fourth ways indicated obviously do not interpret 'home' as the child's own community. Those using the term to cover material of the first three types cited betray either a lack of knowledge of the criteria by which the modern science of geography is differentiated from other sciences or failure to analyze the situation in terms of those criteria.

VIII. STUDIES CONCERNING THE TESTING OF ACHIEVEMENT

Analyses described in Chapters VII and VIII afford criteria for constructing tests for geographic achievement. Applying to the testing problem the conclusions derived from those analyses, it is clear that one should test for evidences of mastery of geographic understandings and for distinctively geographic abilities, instead of for mere information. Considerable headway has been made in discovering means of so doing.

Experimentation with a true-false form of objective test is representative of such work. French reading tests furnished the idea upon which this experimentation was based. Inspection of true-false tests in various subjects disclosed the fact that they commonly test for

mere information. Some of the French reading tests examined were exceptions in that they effectively tested ability to read French. The technique was that of basing the statements to be marked 'true' or 'false' upon a preceding French sentence or paragraph. Since only from that passage could one determine the truth or falsity of the statements based on it, an ability to read French was evidenced by a correct reaction, barring the chance element.

It has been found that a similar scheme works equally well in testing for landscape-reading ability, map-reading ability, graph-reading ability, and ability to read the printed page for geographic purposes.

To illustrate such procedure, the New York test presented in Chapter VII may be reconsidered. If those examined had been asked to mark 'true' or 'false' such statements as the following (statements based on those maps) their reactions would have indicated their possession or lack of certain phases of map-reading ability:

(1) In going from Meadowvale to the place marked IV in the southwestern part of the area mapped in Figure 2, one would go from higher to lower land.

(2) In the second half of the trip just mentioned, one would encounter greater change in elevation than in the first half of it.

(3) In view of what the map in Figure 3 shows about the surface of the region depicted, it is probable that more people live in the northern third of it than in the southern third.

(4) The map in Figure 1 suggests that it would be more difficult to bridge the Nile Valley at Edfu than at Beni Hassan.

(5) Cairo is north of Beni Hassan.

(6) Other things equal, it would require more power to propel a boat from Cairo to Beni Hassan than from Beni Hassan to Cairo.

Pictures, paragraphs, sentences, graphs, and tables of statistics all can be used similarly, it was found, as a basis for exercises that will test not only ability to read accurately facts there expressed but also ability to reason concerning explanations of the facts shown by using knowledge of geographic relationships. It seems that tests of this type probably will be of much utility in the further development of the science of teaching geography.

CHAPTER X

MAJOR CONCLUSIONS TO BE DRAWN FROM THE INVESTIGATIONS

EDITH PUTNAM PARKER

In an attempt to see as a whole the nature and scope of the science of teaching geography, an effort has been made to conduct as many as practicable of the numerous kinds of investigations involved rather than to concentrate intensively on a few aspects of the work. This spread of attack seemed essential in the initial stages of the development because, as pointed out in an earlier connection, there is grave danger of arriving at erroneous major conclusions if all aspects of the subject have not been considered. On the basis of a single type of 'social import' study, for example, various persons have jumped to premature conclusions concerning the place of certain elements in the scheme of geographic training, conclusions that were ill advised because social import is only one of the factors involved, and the findings established only one of several bases for conclusions concerning social import.

Furthermore, by this spread of attack, techniques suitable for various types of investigation have been found, and knowledge concerning them will facilitate later and more intensive work on certain phases of the science.

The conclusions that follow are those that seem sound in the light of findings of the types reported, but some of them may need revision as the science of teaching geography develops further. None of them is included on the ground of mere opinion. Each is based on such knowledge of the factors involved as is available. The conclusions are assembled in this form to give a general view of the science of teaching geography at its present stage.

I. THE NATURE OF GEOGRAPHIC TRAINING

Geographic training is training directed toward developing (1) an understanding of relationships of man to his natural environment,

(2) an ability to use accurate understandings of that nature in solving everyday problems, and (3) distinctive tool-using abilities that will enable one to acquire for himself further geographic information and more skill in its use.

The interpretation of human adjustments to natural environment involves consideration of the cultural assets and liabilities of the people concerned as well as of the natural resources of which the people take advantage and the natural elements with which they cope in making those adjustments.

II. THE SELECTION OF MATERIAL

1. Relation to Theme and to Ability of Pupils

Material for use in geographic training should be selected in terms of the particular theme to be developed and the ability of pupils to make effective use of the material at the time when it is presented.

The value of material of any type for instructional purposes in geography depends on the contribution which that material can make toward gaining the major geographic idea in the development of which it is to function; the greater the contribution, the greater its value.

In selecting materials, one should bear in mind the particular type or types of contribution each item is qualified to make to geographic training. Pictures and actual landscapes contribute chiefly by giving concrete concepts of observable cultural and natural features that are elements in geographic thinking. Maps contribute chiefly by giving ideas of location, distance, direction, elevation, slope, size, and distributions of cultural and natural features. Graphs and statistics contribute chiefly ideas of quantitative comparisons relating to cultural and natural items. Reading matter contributes in some measure in all the afore-mentioned ways, and may have high utility as a tool for directing the use of the materials presented. It is valuable as a check on information gained from other sources; it supplements information acquired elsewhere; and it aids in unifying, summarizing, and fixing groups of impressions gained by various means.

The ability of a child to make effective use of material of geographic quality depends on (1) the relative difficulty of the material, (2) the amount and kind of experience he has had with such material, and (3) the amount and quality of the guidance he is given in using it for geographic purposes.

2. Pictures

Pictures that show human activity or signs of human activity in its natural setting are of high geographic quality because they show or suggest (1) what man was doing in the place illustrated, (2) the kind of place in which he was doing it, and (3) ways in which natural and cultural facts revealed help to explain the adjustments people there have made to their natural environment.

A picture may be of high geographic quality and nevertheless have slight value in a given unit, because it may suggest only geographic relationships that play an insignificant part in the adjustments of people to their natural environment in the region with which the unit deals. The value in a given regional unit of a picture of high geographic quality depends on its utility as an aid in portraying the geographic character or personality of the region.

Pictures that show cultural features with little or no indication of their natural setting, and pictures that show natural features with little or no indication of man's relation to them, have less to contribute to geographic training than those of cultural features in their natural setting. Such pictures, however, are useful in giving concepts of features which are involved in geographic relational ideas, and if used to contribute to such ideas, they function helpfully in geographic training.

The value of a picture for geographic purposes depends also on its legibility—the clarity of the significant cultural and natural features. Legibility or clarity depends in turn on the mechanical quality of the picture, on the number of items shown, and on the composition of the scene. The composition should be such as to center interest, without confusion, on the items of chief value in discovering geographic relationships.

3. Maps

Maps of greatest general utility in geographic training, except at the first level, are physical-political maps on which surface is depicted by color bands denoting *elevation*, (not geologic age, or origin of surface features), and on which the major political boundaries, the main railroads, and the chief cities are symbolized. The geographic quality of such maps is high because they show cultural items, such as boundaries, railroads, and cities, in their relation to the more significant surface features—slope, drainage, and elevation.

The value of maps of the foregoing type and of other types depends in large measure, of course, upon their accuracy. Value is based also on their legibility, which in turn depends on the clarity with which they tell the facts they are designed to show. Clarity hinges chiefly on the proper use of color and on showing the proper number of items (symbolized and named) on the map. The use of too many items obscures the story the map has to tell.

Political maps have little value in geographic training. Most of them show no facts which the physical-political map does not show, and one can read from them few or no relationships of boundaries and the other human items to basic natural features. Political maps that show spheres of political influence have utility, but they constitute a special type of political map useful at higher levels of geographic training where such human items as 'political spheres' are elements in geographic understandings.

Maps of greatest value in the first stage of geographic training are those on which only semi-pictorial symbols are used, and on which are shown only the symbols of cultural and natural features that are needed in developing the least intensive type of regional geographic personality understandings.

Maps showing the distribution (by color-band, color-spot, and dot devices) of cultural items, such as population, crop production, and mineral production, and similar maps showing distributions of natural resources, such as coal deposits, rainfall, and forests, contribute to geographic training if ideas gained from them are used to show relationships between cultural items and natural items.

Similarly, at higher stages of geographic training, maps showing distributions of cultural or natural features in terms of the more abstract iso-line symbols are serviceable to the extent to which they are used for geographic ends.

The essence of the foregoing statements concerning the relative geographic quality of pictures and maps is applicable in determining the geographic quality of graphic, statistical, museum, and reading material.

III. PUPIL ACTIVITIES IN GEOGRAPHIC WORK

Pupil activities of value in geographic work are those concerned with (1) getting geographic information, (2) thinking in terms of such information in gaining major geographic ideas, (3) expressing in-

formation or ideas having geographic quality, and (4) using geographic understandings as aids in the solution of problems in which these understandings are elements.

Much practice in getting geographic information with a minimum of guidance is requisite to the development of the ability to get such information independently. Subsequent practice is essential in order to increase one's skill and effectiveness in acquiring such information without aid. Similarly, oft-repeated activities of Types 2, 3, and 4 are essential in gaining the ability to perform those activities independently, accurately, and without waste of time and effort. Accordingly, children should be guided, in so far as practicable, (1) to be active in getting geographic information for themselves, instead of being passive recipients of it; (2) to 'think through' geographic relationships for themselves instead of memorizing 'reasons'; (3) to express geographic information and ideas in their own words or in other media, instead of 'parroting' them; and (4) to be active in using geographic understandings as an aid in solving new problems, instead of being shown passively how those understandings are useful in such connections.

Practicability in the performance of activities of the first type noted hinges, in so far as the child is concerned, on the apperceptive background he brings to the task at hand—the degree to which ability of each specific type needed has been developed by earlier experiences. Responsibility should be placed on the child only for gaining, by himself, information from objects in a picture, symbols on a map, graph symbols, and verbal terms, the meaning of which he knows. Objects, symbols, and terms that are unfamiliar to him and that are needed for the particular understanding he is to acquire should be explained with such care that thereafter they will be in the familiar group and may be used by him independently. Guessing as to their significance not only is a waste of time, but also breeds an unscientific attitude and poor habits of study. Only by careful discrimination between (1) material from which a child can gain information accurately by himself, by reason of familiarity with its elements, and (2) material that should be given him, can one effectively guide him in the performance of geographic learning activities.

Effective gradation in the development of landscape-reading ability, map-reading ability, graph-reading ability, and ability to read the printed page for geographic information involves the introduction of new objects, new symbols, and new terms at those points where they

first are needed for geographic purposes and in such a manner that thereafter the child is able to use them efficiently in getting geographic information for himself. It also involves holding the child responsible thereafter for the use of familiar objects, symbols, and terms in getting information independently.

In like manner, activities of each of the other types noted should be graded by (1) holding pupils responsible at every juncture for the independent use of familiar ideas and of such ability of the types needed as they possess from earlier experiences, but (2) by showing them the new ways in which cultural and natural items are related, new means of expression, and new ways in which geographic ideas aid them in solving problems.

It is desirable to assemble the pictures, maps, graphs, and reading matter essential for gaining any given major geographic understanding in a single source or as compactly as practicable, instead of sending the child to scattered sources. Scattered sources are of value chiefly in application exercises that afford an opportunity to interpret, in the light of knowledge already gained, what is read from varied sources. Getting information from scattered sources in the process of mastering a major idea tends to hamper the process, not to help it. 'Wide' reading does not have to be 'scattered' reading; it may be 'assembled' reading.

No learning or expressional activities of any type constitute ends or objectives of geographic training; these activities are in all cases merely means through which geographic ideas and abilities are acquired that in turn contribute to attitudes, insights, and the power to think independently and scientifically. Motor activities, the ends or objectives of which are paper dolls, cardboard houses, whittled boats, forests of parsley, and the like, involve an utter waste of materials and of time, so far as real geographic training is concerned. Only if and when motor activities contribute more to geographic understandings than other activities could do are they desirable, and such cases are few. The most important expressional activities in geographic training are those concerned with the expression, in as useful and simple a form as can be found, of fundamental geographic ideas gained from geographic information. Children recognize the innate interest and value of these ideas, and need no motivation, such as a desire to tinker with whittling tools, in order to want to learn how an ore-boat, for example, is adjusted to the type of product it is designed to carry. Activities that divert

attention from geographic thinking to manual construction are harmful in geographic training.

The drama is not, as a rule, an effective form in which to summarize geographic ideas. Some stories of geographic adjustment are indeed dramatic, but attempts to express most geographic ideas in this particular literary form do violence both to geography and to drama. Geography is a science, and the expressional activities involved in its study should be directed primarily to training in the clear, accurate statement of the ideas with which it deals.

IV. ORGANIZING GEOGRAPHIC MATERIAL

Geographic material should be organized in terms of major geographic ideas comprehensible to children. Each unit of subject matter should lead to one such 'core' understanding or generalization.

1. The Simpler Geographic Ideas and Lower Levels of Geographic Training

Major geographic ideas are of three main types. One type is concerned with the geographic personality of specific regions; a second, with the relation of given human items to natural environment in the various regions where those items are found; and a third, with the relation of human items to specific natural factors or complexes of such factors in the various regions where those factors or those complexes obtain.

Regional personality ideas differ in complexity. The less complex ideas of this type are comprehended more readily than are ideas of the second and third types noted, and, accordingly, they should constitute the organizing centers of the units used in the early stages of geographic training.

The *least complex order of regional personality unit* deals only with simple, readily comprehended relationships between outstanding kinds of work, food, clothing, shelter, and travel in given regions and outstanding natural conditions in those regions. Regions suitable for use in such units are those in which adjustments that can be comprehended readily are major elements in the geographic individuality of the regions. Representative of such regions are the Sahara, the Nile Region, Amazonia, and the Netherlands. Such units are within the comprehension of fourth-grade pupils.

The *first level, or stage, of geographic training* is characterized by the acquisition on the part of pupils of (1) eight or more major ideas of the type just described, ideas of such a nature as to afford an apperceptive background for the simplest geographic world understanding; (2) a 'climax' understanding concerning relationships between human activities and the distance from the equator of the regions where they are carried on; and (3) ability to use effectively in later work a knowledge of the landscape features, map symbols, terms, and relationships introduced in the development of the foregoing understandings.

Regional personality units of the *second order of complexity* are those into which are introduced ideas concerning (1) the distribution of people, (2) patterns of land utilization, and (3) reasons for both, in addition to ideas of the type noted in the case of the simplest units. Regions suitable for use in the simpler units of this type are what may be termed 'human-use' regions. Human-use regions in the United States are those a knowledge of which is of greatest value to American citizens. Human-use regions in which 'primary' activities are dominant are interpreted more readily with respect to their geography than are those in which 'secondary' activities are dominant. Units of the second order of complexity are within the comprehension of children who have completed satisfactorily the first stage of geographic training.

The *second level of geographic training* is characterized by the acquisition on the part of pupils of (1) ideas (of second order of complexity) of the geographic personality of the human-use regions in one's own country; (2) a 'climax' understanding (also of second-order of complexity) of the geographic personality of that country; and (3) ability to use effectively in later work a knowledge of the landscape features, map symbols, graph symbols, terms, and relationships introduced in the development of the foregoing understandings.

Regional personality units of the *third order of complexity* are those about countries, such as Canada, France, or equivalent groups of countries. The core understanding of each unit is similar to the climactic understanding in the second level; it involves an understanding of human-use regions within the country or the groups of countries under consideration. Into units of the third level of complexity there also enter ideas of various human items, such as the standard of living and cultural traits of the people involved, that are somewhat more difficult to comprehend than the distribution of human and natural

features or conditions. However, units of this degree of complexity involve chiefly relationships between human items and the natural environment *within* the regions under consideration. If external relationships are introduced, they are concerned with regions the personalities of which have been treated in earlier units. Countries that are suitable for units of this degree of complexity are those in which dual cultures, one native and the other imported, are not among the outstanding human items in the geographic interpretation of the regions. Countries in which the cultural assets of the people are much like those of one's homeland are understood with less difficulty than those in which the cultural assets of the people differ markedly from those with which one is most familiar. Such units are within the comprehension of pupils who have satisfactorily completed the second stage of geographic training.

The *third level of geographic training* is characterized by the acquisition on the part of pupils of (1) understandings (of third-level complexity) of the geographic personalities of selected countries; (2) a climactic understanding (also of third-level complexity) of the geographic personality of the larger region which the selected countries constitute or represent; and (3) tool-using abilities developed in the course of gaining these understandings.

Regional personality units of the *fourth order of complexity* are like those of the third order, with the exception that dual cultures and many external relationships concerned with the geography of present or recent spheres of political influence enter into the understandings. Countries that are suitable for units of this degree of complexity are those, such as Latin American and African countries, in which adjustments are explained in terms of natural conditions in the European countries from which the ruling peoples came as well as in terms of natural conditions in the countries comprising the units. Such units are within the comprehension of pupils who have completed the third stage of geographic training.

The *fourth level of geographic training* is characterized by the acquisition on the part of pupils of: (1) understandings (of fourth-order complexity) of the geographic personalities of countries characterized by dual cultures and by political items related to conditions in other countries; (2) climactic understandings (also of fourth-order complexity) concerning the relationships between the world population pattern, the world human-use pattern, the world country pattern, and

the world pattern of spheres of political influence, on the one hand, and the world natural environmental pattern, on the other hand; and (3) tool-using abilities developed in the course of gaining these understandings.

2. Stress in Proportion to Importance to American Citizens

In the organization of a course in geography, the regional personalities of countries should be stressed, as far as practicable, in proportion to the importance that a knowledge of those countries has to American citizens. The earlier in a program a country is introduced, the greater is the opportunity in his later study which a young citizen has to strengthen and use his knowledge of it. On the other hand, the later it is introduced, the deeper and the more thorough is the initial type of understanding he can gain concerning it. To capitalize both advantages necessitates consideration of regions of outstanding importance at two levels: an early level at which a personality understanding of relatively slight complexity is gained, and a later level at which much more complex understanding can be gained by the child.

Statistical studies, as has been noted, show that a knowledge of the geographic personality of the United States is of prime importance to American citizens, and that other countries rank, in decreasing order of importance, as follows: Canada, countries of Western Europe, other Eurasian countries, countries of Latin America (Mexico, Central America, and South America), and other countries (Africa and Australia).

Most regions in the United States are not suitable for the simplest units. By devoting to them the second stage of geographic training, for which stage they are suitable, one capitalizes advantages that come from introducing major geographic ideas about the country as early as practicable. Introducing the country again at a fifth level—the nature of this level is described somewhat later in this chapter—capitalizes the advantages derived from ability at that higher level to gain a much deeper and more valuable geographic understanding of it. This procedure does not necessitate undesirable repetition, but rather an understanding of the simpler aspects of personality at one level followed by an understanding of the more difficult aspects of it at a later stage.

The introduction of Canada and of the countries of Western Europe at the outset of the third level secures the benefits to be derived from gaining understandings concerning them at the earliest time practicable,

in view of the greater significance of the United States and the relative difficulty of the major ideas involved. Since these European countries are the centers of spheres of political influence, a consideration of which is appropriate in units of fourth-order complexity, more complex understandings, involving the more abstract political characteristics of these countries, are gained from fourth-level units. Europe is seen in a new light in connection with the study of regions into the geographic personalities of which there enter numerous external relationships involving conditions in European 'homelands.'

The treatment of Latin American countries at the outset of the fourth level of training gives to the units on those countries the benefit of an emphasis which comes with understandings of fourth-order complexity, a complexity that hinges on possession of the European background. Without such a background, many Latin American adjustments cannot be understood. In the treatment of political spheres of influence at the fourth level, Africa is involved, not in terms of thorough understandings of each country or colony, but in terms of British, French, and other spheres of influence therein. A major geographic idea concerned with Australia is needed for the first time in the consideration of Britain's sphere of influence, and in this same connection the understanding of Canada is deepened. The order of introduction and complexity of treatment indicated in the foregoing statements constitute one means of distributing emphasis in proportion to the social import of the various countries to American citizens without violating the principle of gradation from simple to complex understandings.

In measuring emphasis objectively, the space devoted to a topic in a text and the time devoted to it in class are only two of the factors involved. Fallacious conclusions have been drawn from some studies in which *space* and *time* were the only aspects. The counting of *ideas* having geographic quality is essential for the following reasons: If a new element enters into a given idea, it may take much more space or time to present the idea effectively than to present one which has equal weight in the treatment but which involves only familiar elements. Again, much space and time may be devoted to material containing few or no geographic ideas, material which therefore contributes little or nothing to an understanding of the geography of the region to which it relates. Finally, not all the evidence of emphasis put on the geography of a region is to be found in the chapter or class periods dealing primarily with it. An understanding of a region develops as one finds adjustments elsewhere that are concerned with that region.

3. The More Complex Geographic Ideas and Higher Levels of Geographic Training

Regional personality ideas of the *fifth order of complexity* are those into which enter relationships between human items in that region and both the human and natural items in all parts of the world involved in their interpretation. Such ideas are comprehensible to pupils who have completed the fourth level of geographic training. An understanding of the general nature of such relationships can be gained from a detailed study of the world relationships (external) of a single country. On the basis of social import, that country obviously should be the pupil's homeland.

The *fifth level of geographic training* is characterized by the acquisition on the part of pupils of (1) understandings of how activities of a given type, such as farming activities in one's homeland, are related to cultural and natural conditions in other parts of the world; (2) a climactic understanding of the geographic interdependence of the homeland and other parts of the world; and (3) tool-using abilities and application abilities gained in the development of those understandings.

The *sixth level of geographic training* is characterized not by regional personality understandings, but by those concerned with the relationships of economic activities of given types to cultural and natural items in the various regions where those activities are carried on. Units concerned with the commercial personalities of given trade regions, or with the production and consumption of given commodities, and with trade in them, are representative.

The *seventh level of geographic training* is characterized by understandings concerned with the geographic relationships of political activities of given types in the various regions where those activities are carried on. Units concerned with the political activities of a given country or with a political activity of a given type in several or many countries are representative.

As yet, experimentation is insufficient to warrant definite conclusions as to the level represented by the only other major type of geographic idea, that which is concerned with the relation of human items to specific natural factors or complexes of such factors in the various regions where those factors or those complexes obtain. Subjective analysis suggests that such understandings are approximately as difficult as those of the geography of political activities. Whether, how-

ever such units constitute part of the seventh level or belong to an eighth level is not clear.

A striking difference distinguishes the fourth, fifth, sixth, and seventh levels of geographic training from the first three. The former involve ideas concerned with the population pattern, land-utilization patterns, and other human patterns of the world, while world patterns of such kinds are not involved in the first three stages. The initial world understanding that marks the climax of the first level involves relationships merely to general world location. The seven levels accordingly constitute two major groups. The group including the first three levels may be termed 'elementary' training, and the world group, 'secondary' training. In the 'secondary' group, the fourth and fifth differ from the sixth and seventh levels in that the former are concerned with regional personality understandings of considerable depth, while the latter are concerned with understandings of other types. Clearly, then, there are what may be termed a 'lower secondary' group and an 'upper secondary' group. 'Elementary,' 'lower secondary,' and 'upper secondary' training together constitute 'general geographic training.' Higher levels of geographic training constitute specialization in the field. The characterization of those levels, the highest of which results in a doctor's degree in geography, is not discussed here because they are of concern only to colleges and universities.

It is to be noted that grade levels at which the various levels of geographic training are appropriate were indicated only in the first case. The critical element in determining a pupil's fitness for beginning a given level of training in that of previous accomplishment. A child who has completed the third level satisfactorily is ready for the fourth, regardless of his grade in school or his age. Findings concerning time requirements were reported in an earlier connection and are roughly indicative of what may be accomplished.

In the case of the first level, no geographic training is prerequisite. Since reading is the chief avenue through which a child is guided to the use of pictures, maps, and other materials so as to acquire distinctive geographic ideas, he is hampered in geographic work unless he has learned to read with what commonly is termed 'beginning fourth grade' facility. Until he has learned to read for general purposes with that degree of skill, he experiences undue difficulty in reading for geographic purposes. His attention is centered chiefly on reading, rather than on getting geographic ideas through reading.

If there are introduced in the primary grades, in the course of developing general reading ability or other general tool-using abilities, stories of peoples of other lands, observations of the home community, and other experiences in which isolated and minor geographic relationships are expressed, those experiences do not constitute what properly may be called 'primary geography,' 'pre-geography,' or 'an initial stage in geographic training.' They involve, instead, materials directed to gaining the ability to read for general purposes or to acquiring other general abilities. A child who has acquired those primary abilities, with or without the experiences noted, is ready for geographic training of the first level. There is a sharp distinction between the use of material involving isolated minor geographic ideas to gain tool-using abilities (something which characterizes primary work) and the use of general tool-using abilities that already have been acquired to master, express, and apply major geographic understandings. Only the latter constitutes real geographic training.

Things which a child actually observes in his own locality obviously furnish the requisite apperceptive background for his visualization of similar features elsewhere. At the outset of geographic training, however, the only features a child needs to recognize are persons, houses, clothes, trees, grass, and the like. Whenever an item he can observe at home is helpful in his visualization of something elsewhere, the object should be noted then and used in the comparison. Observations in the home locality are essential at all levels of geographic instruction. Observing them in the primary grades is of value in various general ways, but it does not obviate the necessity of observing them again and again, with greater particularity and from new points of view, when such observation will function immediately in geographic training. It obviously is not necessary to have observed them in the primary grades in order for observation of them to function where it is needed in real geographic training.

The geography of the home locality is appropriate in the second level of geographic training, and a deeper study of the personality of the home locality is appropriate in the fourth level of such training.

In a given unit at any level of training there should be introduced those materials, and only those, that are needed in gaining concepts, facts, and individual minor geographic relational ideas on which the major idea of that unit is based. These materials should be so used as to result in the pupil's acquisition of that major idea.

Since the learning activities children perform are as essential in gaining geographic understandings as is the source material used in those activities, exercises are a vital part of every unit, not addenda to the study. They provide the guidance requisite in learning to study geography well.

Activities for which exercises should provide are those that direct children's attention consistently and repeatedly to human items, to natural items that help explain the human items noted, and to ways in which natural items help explain the human ones. The foregoing statement relates to the use of pictures, actual landscapes, maps, graphs, statistics, reading matter, and all other materials used.

Directions given for study should be not only of geographic quality, but also specific and definite. Such directions as 'study the picture' or 'find what you can from the map' are of no aid to a child in developing geographic tool-using abilities. 'Find what you can about the material used in the houses shown' centers attention, for example, on specific human items. 'Find from the maps the amount of rain which falls in the jute-producing plains of the lower Ganges' directs attention to a significant cultural item and to two natural items to which the growing of jute is related.

Repeated use of exercises of the type last illustrated helps to establish habits of geographic study as compared with habits of study in other subjects. Thus, a child who has formed the habit of reading for geographic purposes, as distinct from the habit of general reading, looks consistently for facts about man and his activities, for facts about natural conditions that help explain them, and for ways in which the natural conditions help explain the cultural items.

Steps involved in the effective organization of units in geography are the following: (1) giving a survey of outstanding human items to be explained; (2) giving, before the detailed study begins, the keynote of the explanation, or raising a problem as to why the human items noted are outstanding in the region or activity under consideration; (3) giving experiences that bear out and round out the specific major theme and result in firm grasp of the major idea; (4) giving experiences in summarizing the ideas gained, in testing the grasp of them, and in using them in new situations.

In connection with problems, it should be noted that only problems of the type just indicated are effective. Much worthless and even harmful work has been done in leading children to solve problems of

little or no significance in developing the major geographic idea to be gained.

The use of well organized material in geographic training is somewhat analogous to the spinning and weaving processes employed in making a fabric. The facts, concepts, and minor relational ideas needed may be likened to the wool or cotton fibers. They are spun into major geographic ideas, or threads of understanding. Major understandings gained in the first three levels are warp threads. The woof threads that bind the whole into a fabric are the understandings involving world patterns that are representative of higher levels of geographic training. The mental 'cloth' thus fabricated is useful in many ways in which threads are not. Similarly, threads are useful for various purposes not served by isolated bits of fiber. Organization that results in successful fabrication of such geographic cloth is essential if the raw materials of geography are to function as effectively as possible in general education.

V. GEOGRAPHY AND OTHER SUBJECTS

In the light of the foregoing considerations it seems that only through material organized expressly for the mastery of major geographic understandings can such understandings be gained effectively and that statements of a similar nature probably are true of major understandings representative of other subjects. If this is valid, the least body of material that properly can be said to represent 'geography' in a curriculum is a geographic unit that leads to the mastery of a major geographic idea.

The proof of the value or lack of value of organizations not providing for such geographic units can be determined only in the light of testing for the distinctive geographic abilities, ideas, habits, insights, and attitudes that result from their use. The construction of such tests is in its infancy. A decade or two of work is needed to collect the necessary data. Meanwhile, there can be neither final proof nor disproof of the value of other types of organization. Indications are that if such tests were administered widely to-day, results would show not only that these distinctive geographic outcomes are not being developed in so called 'integration,' or 'combination,' courses, but also that they are not being developed in many of the courses labelled 'geography.' Unless such outcomes result from a given organization, patently that organization, regardless of what it is called, is not making

for education the contribution latent in real geography; if they do result, the organization is valuable, regardless of its nature or name.

VI. OUTLOOK

Further development of the science of teaching geography depends in no small measure on the coöperation of teachers, administrators, and specialists, alike interested in the numerous investigations which are essential to its growth. Helpful cooperation involves (1) a scientific attitude on the part of the participants, (2) familiarity with the results of investigations already made, (3) an ability to see the relation of any single investigation to the science as a whole, (4) active experimentation with the application of the conclusions that now seem valid. The greater the coöperation of this type, the more rapidly will the science of teaching geography develop.

SECTION III
GEOGRAPHY IN THE CURRICULUM

GUIDE TO SECTION III

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CHAPTER XI

NATURAL ENVIRONMENT AND HUMAN ACTIVITY

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I. INTRODUCTION

The 'natural environment' of people in the many parts of the world may be analyzed into a moderate number of broad concepts that apply to the lives of all peoples in all parts of the world. In the same way 'human activity' may be set forth in a few broad categories readily used and appreciated by teachers and pupils. An analysis of these elements of geography is set forth briefly in tabular form.

Elements of Geography

Elements of the Natural Environment

1. Location
2. Surface or relief
3. Climate
4. Soil
5. Minerals
6. Water Supply
7. Ocean
8. Native plants
9. Native animals
10. Other peoples

Chief Kinds of Human Activity

1. Economic Activities
 - a. Agriculture
 - b. Mining
 - c. Manufacturing
 - d. Commerce
 - e. Grazing
 - f. Lumbering
 - g. Hunting and Fishing
2. Political Activities
3. Social Activities

The study of geography does not involve the presentation of these topics in the order set down in this outline, but when a regional study of geography has been completed, whether of a limited area, a country, or a continent, these elements should be clearly in mind in correct relationship for the understanding of how people adapt their lives and their work to their home localities; how they make use of their natural resources; and how they reach out to the rest of the world for supplies, giving in return of their own resources.

A geographic point of view may be obtained and retained by keeping in mind three questions as guides in the evaluation of geographic

material. These questions have found their way, directly or in essential meaning, into the geography work of the elementary school. They are:

1. Where do people live?
2. Why do they live there?
3. How do they live there?

The population of any region, small or large, is significant in any geographic study. People are found where they are because the geographic conditions are favorable to the support of a population there, whether the population be small or large for the area under consideration. A study of how people live in any locality calls for a geographic interpretation of human activities as related to the natural environment.

II. THE TEN ELEMENTS OF THE NATURAL ENVIRONMENT

In treating the ten chief elements of the natural environment of a people just listed, it is desirable to make clear constantly how these geographic factors influence the everyday activities of the people. In dealing with the activities of the people, constant reference must be made to the influences of the various elements of the natural environment on these activities. The idea of *relationship* existing between these two concrete groups of geographic concepts should be used freely and constantly throughout the study of geography, but the relationship should appear as a natural and obvious mental concept without overemphasis on this phase of the presentation.

The elements of the natural environment are here treated individually, in brief form, for the purpose of enabling the teacher to analyze the complex natural environment into simple units that may be readily appreciated and understood by pupils of the elementary school. These elements of the natural environment may also be called "geographic factors," and they will be so designated from time to time in this discussion.

1. Location

Location is a geographic factor of great importance. Geographic location may involve numerous place relationships. An accurate and comprehensive knowledge of location is necessary to a correct and an adequate consideration of the geography of a region. A well-known lecturer on "Russia of Today" illuminates his thesis throughout by a

comprehensive presentation at the outset of Russia's location and the significance of this location with reference to the land mass of Eurasia; the peoples of western Europe and eastern Asia; the ocean outlets west, north, east, and south; the great expanse of the lands of the north too cold for agriculture; the southern lands too dry for agriculture; the relatively small area with favorable temperature, rainfall, soils, and surface, suitable for successful agriculture. With location thus vividly presented, the lecture is built on a sound foundation of scientific facts.

A description of the location of the land of the Polar Eskimos with reference to latitude, land forms, ocean waters, and commercial opportunities, gives essential geographic concepts that lead naturally and certainly to a correct interpretation of the lives of these interesting people. A similar study of the location of the Congo region gives basic facts necessary for an understanding of the lives of the people of Central Africa. A presentation of the location of a region through a study of globes, maps, and a description of the region, suggests at once the possible and probable activities of the people and discloses at once some relationships of geographic value.

Location is not an end in geographic study, but it is an essential element of the natural environment that is fundamental to all further geographic progress.

2. Surface or Relief

In a geographic study, the interpretation of the surface or relief of a region becomes immediately important in explaining the human activities of the region. It also becomes important in explaining some of the other elements of the natural environment, especially the climate. If the study is introduced by first presenting the human activities, including the distribution of population and the occupations of the people, surface and relief enter at once into any geographic explanation of these activities. The geographic interpretation gives significance to both the physical setting and the human action.

3. Climate

Weather and climate form one of the chief factors in the geographic interpretation of any region. The simplest concept of the climate of any area must involve a knowledge of its temperature and its rainfall. Added certainty of the influence of climate comes with a knowledge of winds, cloudiness, and humidity. The fact that the Amazon Basin

and the Sahara have hot climates does not give a basis for correct comparison, but the knowledge that one region experiences high temperatures and abundant rainfall while the other has high temperatures and little rainfall gives a basis for understanding the wide contrasts in the living conditions of the two areas.

4. Soil

Difference in soil fertility often marks a striking contrast in living conditions in areas otherwise quite similar. A scientific treatment of soil is beyond the scope of elementary geography, but the value of extensive areas of rich and fertile soils is reflected in the nature and extent of human activities of large populations.

5. Minerals

Geographic interpretation of a region takes into account its mineral resources and the extent to which they are produced and used. A knowledge of the coal and iron resources of any region is fundamental in the interpretation of the progress of its people. The interpretation of mineral resources and their value to man is one of the illuminating concepts in geography.

6. Water Supply

Water for growing crops, for domestic purposes, navigation, power, and irrigation, is an essential element in human activities. The domestic water supply of the home locality may furnish a valuable topic for geographic consideration. The water supply of large cities, such as New York, Chicago, or Los Angeles, is worthy of detailed presentation. If the value of water in its many human uses is fully appreciated by the teacher, numerous opportunities arise for comparative studies as progress is made during the geography work. It is well to emphasize from time to time the significance to mankind of the common elements of the natural environment, such as water, soil, minerals, wind, rain, mountains and plains. This will lend a keener interest in the value of such things to the individual, to the community, and to the world.

7. The Ocean

The ocean holds a large place in human affairs. As a great natural resource it needs emphasis in the interpretation of related geographic

topics, such as fishing, world highways, foreign trade, and climates of various regions in which oceanic influence is clearly marked.

8. Native Plants

The mantle of natural vegetation over the land areas of the earth always has been nature's great gift to primitive man. From the natural vegetation directly, or indirectly through animals, primitive man has obtained his food, his clothing, and his shelter. The same is true in a very real sense of the people of the world today. While the natural vegetation in the forests and the grasslands has given place in large areas to cultivated plants, every cultivated plant has been derived from an original form of native vegetation. The characteristics of the native forests and the native grasslands indicated to man the value of the lands for the growing of cultivated crops. It is of interest to know why certain regions have had their natural vegetation replaced by cultivated crops, while the natural vegetation of more extensive areas remains untouched by the agriculturist.

9. Native Animals

Native animals, like native plants, formed a part of man's early environment. With the clearing away of the natural vegetation and the substitution of cultivated plants, native life also changed; some kinds of the native animals disappeared entirely and others increased in number. Domestic animals, all of which originally were derived from native animals, are of utmost importance to the farmer. The bird life and the insect life, the fish of stream and lake and ocean, all enter into relationship with the human activities of a region.

10. Other Peoples

Shall we consider people as a part of the natural environment of man? In primitive society one tribe of people is greatly influenced in its life by the presence and activities of neighboring tribes. When European colonists settled in America, they found the native Indian a formidable element in their new homeland. As colonies grew and expanded, each found neighboring colonies of the same or different nationalities important factors in their colonial environment. Established nations, such as Britain, France, Germany, Italy, look upon neighboring nations as real factors of their environment, influencing their activities in ways economic, political, and social. In geography,

therefore, the human element of the environment becomes one for consideration.

The foregoing analysis shows that geography deals with the large and evident objects of universal human interest and endeavors to interpret to elementary-school children some of the relationships that are universal in human experience. Geography can make clear that people everywhere are engaged in making intelligent use of their natural environment in order to secure a satisfactory living. It is this universal appeal to universal human needs that is awakened and that better enables all peoples to understand each other.

III. HUMAN ACTIVITIES

A geographic consideration of human activities leads to a simple explanation of these activities in relation to the natural environment.

1. Economic Activities

The economic activities or occupations of mankind consist of work that contributes daily to securing a living. These economic activities furnish the chief human elements of geographic study. These activities are so fundamental, so varied, and so interesting, that they become a central theme in elementary-school geography.

a. Agriculture. This is the outstanding occupation of the world today and must remain so throughout human history. It is the immediate source for food supplies and clothing materials for nearly all the world's population, whether they live on farms, in villages, or in great cities.

A geographic interpretation of the Cotton Belt of the United States points out that the southern limit of the Cotton Belt is not the Gulf of Mexico, but a line or zone beyond which too much autumn rain prevents proper ripening and harvesting of cotton; that the western limit is the region of too little rainfall for a profitable cotton crop; that the northern limit is where the frostless season becomes less than 200 days. Thus the Cotton Belt is bounded not by state lines, but by geographic factors operating naturally. Surface and soil are other elements for consideration in the study of the Cotton Belt.

Crops of all kinds are the direct result of man's work. His agricultural efforts are always conditioned in a large measure by the natural environment. The simple, but fundamental variations in the relationships existing between agricultural activity and the natural

environment throughout the world are sources of never-ending interest and profit in the pursuit of geographic knowledge.

b. Mining. In any region mining depends on the presence of a useful mineral or minerals that can be profitably mined and transported where needed. Gold has been secured from the frozen wastes of Alaska and Canada and from desert regions of other parts of the world, but rich iron-ore deposits or thick coal beds in those localities would not have been exploited, because of difficulty of transportation. The abundance or the lack of mineral resources in any country or region gives a basis for understanding certain economic factors in the everyday activities of the people.

c. Manufacturing. As developed in the industrialized countries, manufacturing is based fundamentally on supplies provided by agriculture and mining and supplemented by water power. The interrelationships of occupation give opportunity for important geographic interpretations. Recent progress of nations in developing manufacturing enterprises furnishes illuminating geographic concepts.

d. Commerce. Both domestic and foreign commerce is an outgrowth of the results secured through agriculture, mining, and manufacturing. Commerce is essential in the structure of present-day human activities and calls for nation-wide and world-wide coöperation. Commerce, more than any other occupation, has called statesmen into conferences that endeavor to assure peace, goodwill, mutual understanding, and prosperity throughout the world.

The four activities just mentioned, agriculture, mining, manufacturing, and commerce, are the chief occupations of the modern world. The professional services of lawyers, doctors, preachers, teachers, and others are simply a part of the activities of people engaged in these major occupations.

e. Grazing, Lumbering, Hunting, and Fishing. These are four minor, or secondary, occupations employing fewer people than the four chief, or major, occupations. These secondary occupations are definitely conditioned by certain elements of the natural environment. They receive interpretation through their relationship to surface, soil, and climatic conditions. Grazing areas in regions with all the natural conditions for successful agriculture have become crop lands under pressure of agricultural needs. Forests have been cut for lumber and the land turned into farms. Hunting grounds have disappeared as agriculture has moved into the hunting districts.

2. Political and Social Activities

Political and social movements that deal specifically with economic situations are often directly associated with geographic factors.

Tariff regulations have significant geographic values. The United States tariff on sugar operates to the advantage of the sugar interests in Hawaii and to the disadvantage of the same industry in Cuba.

The scientific work of the United States Department of Agriculture in obtaining and disseminating information enables farmers and business firms to carry on their work with assurance through the aid of governmental agencies. The United States Weather Bureau, an organization within the Department of Agriculture, furnishes scientific data and detailed information on the subject of weather and climate.

Boundary lines between states and between countries are determined by governmental action. The extent to which geographic factors are considered or ignored in the making of boundary lines is of interest in geography. The boundary between eastern United States and eastern Canada is a natural boundary running irregularly along streams and lakes. The United States—Canadian boundary westward from Minnesota follows the forty-ninth parallel until it reaches the ocean inlets; then the boundary line takes an irregular course among islands and their surrounding waters to the open Pacific.

Various customs of society with reference to the kinds of clothing or the kinds of food in extensive use have a geographic bearing. Wide substitution of silk for cotton and of rayon for silk influences economic conditions of the producers of raw materials and of manufactured products.

Only the larger and more obvious influences of political and social activities should find interpretation in elementary geography. The complexities and the uncertainties of the problems soon pass beyond the realm of elementary interpretation.

The teacher of the elementary school will be alert to see and to teach simple, direct, and evident relationships ever existing between natural environment and human activity. Thus boys and girls are given fundamental facts that lead to better understanding of the common elements of human life throughout the world and to an appreciation that distant peoples are "more like us than they are different."

CHAPTER XII

THE RELATION OF GEOGRAPHY TO OTHER SUBJECTS

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I. SUBJECTS *versus* FUSION

There has been for many years a tendency to assign groups of facts to various branches of knowledge and to hold these groups as inviolate parts of the particular subjects. This allotment of facts has resulted in a narrow and constricted view of the different branches of learning, and educators, while apparently accepting the subdivisions, have striven to find some way to bridge the gap between the branches. For a season it was thought that a correlation of the various branches of study would bring about the desired results, and 'correlation' became the much used watchword of teaching. But soon the emphasis began to slacken, although the belief remained that there must be some connection between the subjects, that they were not mutually independent.

Today the word is 'fusion,' and in the advocacy of it, as in that of 'correlation,' there is a protest against the assignment of given facts to specified branches of learning and a hope that the integrating of all learning will solve the problem that has vexed the educator for many years. The spread of the idea of correlation and later of fusion is the result of a feeling on the part of many that there is something lacking in the educative process; while the words may be the fads of the day, to be discarded when some new watchword appears on the horizon, they are at the same time indicators that the various subjects as outlined in courses of study should not be sharply differentiated in content but should in some definite way be related.

II. MAKING FACTS GEOGRAPHIC

An historian, a geographer, or an economist, in the best sense of the word to-day, is not a narrow individual, bounding his thoughts by the constricted view that history, geography, or economics is a definite part of human knowledge dealing with certain things that lie altogether

outside the field of the others and discarding those things that the others claim as their especial field. Each, however, is dealing with a definite line of procedure, making a contribution to human knowledge that is not made and cannot be made by the others. In the process he uses all his knowledge in whatever line he gains it and makes it a constituent part of his subject. A fact or an understanding of history may be taken by geography and then become a geographic factor because it aids in explaining the relationship of mankind to this environment. The geographer is not thereby including history in his subject. If among the environmental factors is an inherited social status handed down for generations, it is necessary possibly to include a knowledge of the development of this before an adequate knowledge of the environment is attained. Thus understandings of history or sociology are brought in, and since they are environment factors, they become integral parts of the geographic argument. The same understandings may be taken over by the sociologist or by the economist as factors in their peculiar contribution and these understandings become parts of sociology and economics. The economist, the geographer, the historian, and the sociologist, each has a distinct and worthwhile contribution to make to human knowledge. The contribution of the historian cannot displace the contribution of the geographer, but the facts of history may be made to aid the contribution of the geographer; and the facts of geography may in like manner be made to aid the contribution of the historian. They are, however, two distinct and separate contributions.

It may be that the contributions of all the subjects of the school curriculum do not sufficiently round out human knowledge, that there may be the need of another line of contribution that will use the facts of geography, of history, of economics, and of the others, somewhat in the same manner as each subject does or should do, and that this new contribution may be called what you will, but this new course will be neither geography nor history nor economics, but will have its own particular contribution. It should be emphasized that such a course must have its particular outcome as the other subjects do; that it will be using the facts of history and the others as steps to a definite end, as geography and the others should and do in part to attain their conclusions; that it will not really teach other subjects any more than a study of geography can be said to teach history because

it uses some of the facts of history; and finally this possible new subject, or course, by using the facts of other branches tacitly bears witness to the value of these other branches, since without them it could not carry out its mission. The total or partial discarding of any of the branches would be disastrous to the verity of the conclusions of the others. So the disuse by any branch of any of the facts of other related branches of learning, of history by geography, of geography by economics, and so on, must necessarily detract from the soundness and completeness of the development within the branch that thus discards reference to its supporting branches of knowledge.

III. NO FACT BOUNDARIES

There is, then, no fact boundary to a special subject; all branches of knowledge contribute to that subject, but there is a boundary to the particular phase of human knowledge that the subject expounds. The specialist in any subject becomes more truly a specialist as the bounds of his knowledge increase; and he is an unworthy advocate of any branch of human knowledge if he has constricted his training to the more apparent and obvious factors that make up his subject matter. Thus correlation or integration is not the solution of the tendency to constrict subject matter; it lies in an appreciation of the idea that the facts of biology, of zoölogy, of economics, must be used by the geographer and that they become thereby factors of geography if they in some way aid in explaining mankind's relationships to his environment. Textbooks somewhat necessarily are written with the constricted view, and they are largely responsible for the notion that subject matter belongs to this or to that rather than to all. While it may be convenient for school expediency to confine in a single textbook and to one branch of learning the detailed teaching of one set of factors—for example, climates to geography—the conclusion that climates are factors of geography only should not be inculcated, since it is obvious that plant ecology and animal ecology must have as much need of climatic data as has geography.

Geography, when it has attempted to bring into its covers and teaching the broad knowledge gained by a liberal education, has been accused of being a catchall of useful and exotic information. On the contrary, what has happened is that it has found it impossible to exclude certain facts, *e.g.*, facts of plant ecology, from its developing theme, and it has drawn liberally on other lines of knowledge. Geog-

raphy is not alone in this; other subjects have done similar things, but all have neglected to round up the full and complete list of factors that contribute to their particular branch. When this is done, the long-standing problem concerning the relationships of subjects that has vexed the educator will be on the way to solution.

The relationship of geography to other subjects cannot, then, be explained by the overlapping of fields of human knowledge, since geography is the interpretation of facts rather than a collection of facts. As a basis for the interpretation, however, geography takes the facts or understandings of many realms of knowledge—of meteorology, or of physiography, or of history or of sociology—uses these as the basis of that peculiar interpretation that yields a geographic resultant. These understandings from meteorology, physiography, and the others are, for the time being and because of their use, factors of geography. In another setting with the peculiar interpretation of history they become factors of history. In other words, facts may and should contribute to all branches of knowledge. They should not be assigned as the inviolate property of any specific branch. A clear understanding of this relation between facts as such and branches of learning in which facts are made use of will go far toward a clearer understanding likewise of the relation between geography and other branches of knowledge.¹

¹ The reader is referred also to Dr. Reeder's chapter on "Method in Geography" (Chapter XX) and to Miss Zink's review in Chapter XXVIII of Dr. Wilson's thesis, "The fusion of social studies in the junior high school."—*A. E. P.*

CHAPTER XIII

THE STUDY OF PEOPLES IN THE CURRICULUM

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I. INTRODUCTION

The study of peoples is not the sole prerogative of geography, but a knowledge of peoples, while not the end in itself, is an important attainment to be secured by studying the subject.

The last quarter of a century has shown a vast improvement in textbook presentations of peoples and consequently in the teaching of this phase of geography. The progress must continue, since the momentum of the older and unfortunate teachings about peoples, although lessening, is not yet overcome. Many textbooks to-day omit all specific reference to peoples and are content to describe the economic status of a nation with no presentation that would explain the group, itself. To be sure, this inadequate treatment is better than the misleading generalizations and the too insistent emphasis on curious customs found in texts of the last century, but a positive effort is needed to offset the erroneous notions that children too easily absorb about alien peoples.

II. SOME RECENT PRESENTATIONS

The desideratum in any classification of peoples is to avoid invidious comparisons and to lay stress on understanding the conditions under which a people live and act in terms of their environment, their achievements, and their ideals. The following classifications, then, are worth considering:

1. In *The Unity of Western Civilization*¹ the attributes of a highly developed civilization or of an advanced people are succinctly described as: (1) collective power through organization, (2) collective knowledge through experience, and (3) collective sympathy, or charity. No relative values are attached to these attributes; the three must be

¹ F. S. Martin, Editor; London, 1921.

considered as of equal value. The most advanced peoples, then, are those who have in the highest degree these attributes, and have them in equal amounts; the most backward people are those who have these attributes in the least degree. If the approach to this idea arises, as is natural in school, from the study of mankind under various physical environments, it is possible that the idea of the backwardness of a people may be attributed to harsh physical surroundings and a lack of natural resources, and in this way the classification of a people as backward may be obtained without opprobrium.

2. Huntington¹ has presented a "map of civilization," based upon the combined judgment of a large number of students of history, geography, and the like rather widely distributed over the earth. This map probably includes all the attributes of civilization, but in varying and unsound ratios, and probably falls short of a just and a true presentation because of conceit, conscious or unconscious, and the ignorance of the compilers. In fact it was shown that in the case of Iceland, this country was designated in all stages of civilization from high to low—high by those contributors from adjacent countries who knew about Iceland, and progressively lower as the distance from Iceland increased. So in all of these judgments there must have crept in a degree of provincialism that greatly affected the results. Nevertheless, such a map is a contribution, and the idea of rating a country on the basis of its achievements, in contrast with the not unusual one of relying on emotional bias and mere rumor, is a distinct gain.

3. Jefferson² has arranged the countries of the world according to their progress in four respects: the number of pupils in school in proportion to the total population, the per capita valuation of the international commerce, the mileage of railways in proportion to the area, and the per capita amount of mail distributed each year. These items were selected because they were available in such publications as the *Statesman's Year Book* and "combine considerable cultural significance with statistical availability." By this method, if a comparison of countries is desired, some country, the United States for example, may be taken as the unit (index 100) in each item, and the average index for that country may then be used as a basis of comparison of the culture of the nations. Jefferson, in figuring the average index, uses the per-

¹ Ellsworth Huntington. *Climate and Civilization*, Yale Univ. Press, 1915.

² Mark, Jefferson. "The culture of nations," *Bulletin Amer. Geog. Soc.*, 43: 1911, 241.

centage of pupils in school twice, making five items to average instead of four. The index is obtained in this way: if 16 percent of the population of the United States is in school, call 16 Index 100. Then a country with 12 percent in school, or three-fourths as many, would have an index of 75, and a country with 20 percent in school would have an index of 125. The student of junior-high-school age who works out some of the indexes by this method will gain experiences and information both startling and salutary and, as a consequence, he may have increased respect for some peoples whom his ignorance may have led him to regard with some contempt.

4. Dryer¹ proposes an economic classification of the peoples of the earth, and, since it is a good step away from the old racial groupings, it has its commendable features. It is as follows:

- I. *Simple Societies*. These depend solely upon their immediate environment for all their wants and have no trade relations with any other group. There are three types:
 1. Societies that use and destroy natural resources, producing nothing, as the Eskimos and the people of the tropical forests.
 2. Societies that produce food and clothing by hoe culture and also use natural resources, as the people of the tropical islands and the margins of deserts and tropical forests; for example, the Pueblo Indians.
 3. Societies whose main resources are domestic animals, as the people of the Steppe.
- II. *Complex Societies*. These only partly supply their own needs and depend upon other societies to supply a large part of their wants. They include:
 1. Societies that produce foodstuffs and raw materials and obtain limited aid from other societies. The Chinese fall into this group.
 2. Societies that export foodstuffs and raw materials and import manufactured goods. Australia and Argentina are of this class.
 3. Societies that import foodstuffs and raw materials and export manufactures. Great Britain, Belgium, and Rhode Island are examples.
 4. Societies that export foodstuffs, raw materials, and manufactures and import chiefly luxuries. They cover enough area to include various physiographic provinces and have a diversity. The United States and the British Empire are examples.

III. DEFINITIONS OF FREQUENTLY USED TERMS

a. *Race* is used in anthropology to divide mankind on the basis of purely morphological and metrical variations of physical characteristics, such as stature, cephalic index, hair, and so on. There is also a

¹C. R. Dryer. *Economic Geography*. New York, 1915.

somewhat widespread but confusing use of the word to designate minor subdivisions of mankind, as 'the Finnic Race,' a branch of the Mongolian race. Therefore it is better not to use *race* to mean the people of a nation; use the word *people*, as 'the English people.'

b. *Nation*. Woolsey, in his *Introduction to International Law*, states that a nation is an organized community within a certain territory; or, in other words, there must be a place where its sole sovereignty is exercised. It must be remembered, then, that the word has reference to a people in a place; there is a French people and a French nation; a Jewish people but not a Jewish nation.

c. *Civilization*. Huntington, in preparing his map of civilization, used as criteria "those characteristics which are generally recognized as of the highest value. It [civilization] depends on the power of initiative, the capacity for formulating new ideas and for carrying them into effect, the power of self-control, high standards of honesty and morality, the power to lead and control other races, the capacity for disseminating ideas, and other similar qualities which will readily suggest themselves. These qualities find expression in high ideals, respect for law, inventiveness, ability to develop philosophical systems, stability and honesty of government, a highly developed system of education, the capacity to dominate the less civilized parts of the world, the ability to carry out far-reaching enterprises covering long periods of time and great areas of the earth's surface."

The word *civilization* means more than *nation*; the latter covers the land and the people; the former includes the latter and comprehends as well the progress of the people. Thus, one may speak of 'the Italian civilization' or 'the Chinese civilization.'

In the same connection, it is well, especially in the grade schools, to avoid the word *civilized* and *uncivilized* as classifications of peoples. There are, of course, degrees of civilization, but just where the line is to be drawn between civilized and uncivilized people is hardly safe for immature minds to consider. The words have been grossly misapplied and their introduction has unjustly cast aspersions on many peoples. The phrase *backward peoples* can be safely used, provided the reasons for backwardness, as harsh climate, diseases, lack of raw materials, and the like, are given. This is likely to awaken sympathy and understanding rather than criticism and contempt.

d. *Custom and Fashion*. *Custom* is the common use or practice either of an individual or a community, but especially of the latter.

Fashion, on the other hand, is the customary make or style in dress, ornament, furnishings, or anything subject to variation of taste or established usage.

At one time many fashions were extensively regarded as customs and a few continue to be so considered. The practice of detailing customs of peoples was, I suspect, an attempt at an understanding of the stage of civilization, but it degenerated into criticism and a search for the exotic and curious. Customs become a geographic factor when they represent adjustments that people make to their environment, and they should be introduced only in this connection, as, for example, the fur clothing of the Eskimos or the slight clothing of the Congo Basin dwellers are customs that have developed because of certain climatic conditions. Fashions, as defined above, have little geographic value and those so commonly mentioned in supplementary books are so ephemeral and so largely irrelevant that in general they detract rather than aid in understanding peoples.

IV. THE INHERITANCE OF COMMUNITIES

One cannot understand the various groups of peoples on the earth without taking a long-time view of their development. Facts from the past must be invoked as an aid, since some of the actions and customs of communities and many of their present attitudes and 'sets' are resultants of conditions that obtained long ago. A detailed study of these conditions cannot be undertaken, but glimpses of some phases of the past should be obtained so as to show the background of a people's attitudes and performances and to demonstrate that the acts of a people are not exotic or whimsical. There is no single way to accomplish this, for each community must be treated somewhat differently, depending on the amount of variance between its civilization and our own. Thus, China would demand more of this type of work than England. For a study of the former country is suggested:

1. Enough of China's history to show its long-developed civilization
2. The appreciation of family life, one of China's outstanding characteristics
3. Her isolation during early years, which yielded an indigenous culture and is the basis of her conservatism
4. The religious development, showing a number of faiths that exist in a spirit of tolerance
5. Her economic life, devoted largely to agriculture and with practically no manufacturing, developed on a manual rather than a machine technique

6. The political life, which is centered upon the welfare of the people and not of the rulers; the lack of a hereditary nobility and the tendency towards democracy

Japan's story and background show distinct contrasts in most ways to those of China:

1. Its establishment was accomplished only after extensive warfare and it is a younger civilization than China
2. Out of its martial background grew the dominance of militarism and the growth of classes.
3. The emperor and the ruling class held a preëminent place.
4. The position of the family is characteristic, as in the case of China.
5. There have been many contacts with other civilizations, which have affected its religion, its intellectual life, and its economic growth.

Such programs cannot be observed for all countries nor is it necessary, since the western civilizations have many things in common. Frequently the ideals of a country may be partially comprehended by a brief survey of the life and character of its great heroes; for example, Cavour and Garibaldi for Italy, or Castriota for Albania.

In the study of peoples, then, it is advisable to use a classification that takes into account the geographic factors that make the peoples understandable in their peculiar environment; to avoid describing them by words that have double or ulterior meanings; and to understand their ideals and attributes by taking a long-time view of their development. Otherwise, false and unfortunate impressions are gained.

SECTION IV
THE CURRICULUM IN GEOGRAPHY

GUIDE TO SECTION IV

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CHAPTER XIV

SOME GENERAL CURRICULAR PRINCIPLES AND THEIR APPLICATIONS

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I. GEOGRAPHIC TRAINING AS A PHASE OF GENERAL EDUCATION

Geographic training in elementary and secondary schools is valuable to the degree that it contributes something distinctive to the objectives of general education. Therefore the emphasis on geographic training as a portion of general education should be in direct proportion to the value of its distinctive contribution to such education. The curriculum in geography is used here to signify that totality of child experiences during the period of general education that results in the attainments of the objectives of modern geographic instruction. Those objectives may be stated as follows:

1. Major Objective

The major objective of geographic instruction is to assist in the development of the child through giving him a knowledge of the interrelationships existing between man and his natural environment in specific regions¹ and an ability to apply such knowledge in solving the problems of living. This implies that the child should learn (1) to distinguish between human and natural elements mentioned in reading matter or indicated in landscapes, pictures, models, maps, and graphs and (2) to see in what ways the natural elements in any given region help to explain the cultural elements that are characteristic of the region.

¹The term 'region' is not restricted to any specific type of region. One may see how man's work is related to natural environment in a political region, a climatic region, an economic region, or a region of some other type. The type of region introduced into the curriculum differs at different levels of instruction.

2. The Concomitant Objectives

The term 'concomitant' is used to denote the objectives that are to be reached in the course of attaining the major one. In other words, attaining these objectives is inherent in attaining the major objective, and requisite to it. If geographic instruction is to reach its major goal, it should be designed to assist the child to gain:

1. Concrete concepts, facts, and relationship ideas necessary for the understanding of the characteristic adjustments man has made, is attempting to make, or might make, to the natural environment in any region studied. Many of these facts have to do with the nature and location or the distribution of the natural and cultural features that are *significant* in the understanding of geographic relationships.
2. The ability to secure knowledge of such facts through the interpretation of pictures, maps, globes, words, specimens, models, graphs, textual materials and through the observations of landscapes in one's home locality and in other regions in which one travels. This involves a knowledge of sources of such information and ability to distinguish between facts of much or of little value in geographic thinking.

3. Ultimate Objectives

The term 'ultimate objective' is used to designate objectives reached through, or growing out of, the attainment of the major objective. If the major objective is reached, the ultimate objectives gained will be:

1. A knowledge of geographic facts, concepts, and relationships that will enable the individual to give more intelligent consideration to current problems—individual, community, national, and international.
2. An understanding of how the varied problems of peoples are related to differences in natural environment; and, developed through this understanding, an interest in, and an open-minded attitude toward, the problems, achievements, and possible future developments of other peoples.
3. A growing power to sense and grasp the economic and cultural interdependence of regions and peoples.
4. A better understanding of the value of natural resources and the need for intelligent use of them.
5. The ability to make a worthwhile use of leisure time through the vitalization of local field trips, of more distant travel, and of

reading because of an understanding of the interrelations between man's working, playing, living, and the elements of the natural environment.

6. The recognition and appreciation of the variety of human labor in the major types of regions through the world, arising from an understanding of man's adjustments to his natural environment.

There should be unity and definite progression throughout the period of geographic instruction. The constant thread of thought running throughout this geographic instruction, whether in the elementary, junior, or senior high school, is the adjustment of man to his natural environment.

II. THE CURRICULUM AND COURSES OF STUDY

Courses of study in any field of education name specific units of each type in that field, specific materials, and specific outcomes. From a given curricular outline a variety of specific courses of study may be evolved, each including units of the types indicated in the curriculum and in the order in which the curriculum indicates that such types should be introduced. Such a course of study in geography involves statements (1) of the major and minor understandings of geographic relationships to be acquired and knowledge both of natural and cultural items needed for such understanding, (2) of the specific abilities that should be developed in the use of actual landscapes, pictures, maps, globes, graphs, models, statistical tables, and word matter, and (3) of desirable expression, checking, testing, and applicational activities. Furthermore, the learning experiences introduced into the course should help the pupils formulate criteria for evaluating the geographic quality of the various tools introduced.

In contrast with the course of study, the curriculum can be set forth only in terms of specific objectives to be attained at each level, types of programs, units of material, and procedure effective in attaining them, together with illustrations of each and detailed types of outcomes resulting.

III. BASES FOR THE DERIVATION OF THE CURRICULUM IN GEOGRAPHY

The first problem in the preparation of a curriculum is that of determining what bases of derivation are to be used. The bases for the derivation of the programs to be recommended are (1) general

curricular principles, (2) application of these principles to the geographic curriculum, and (3) practices and tendencies in current courses of study. These will be considered in turn.

1. General Curricular Principles

Commonly accepted general principles to be applied in the selection and organization of subject matter for a curriculum include the following:

1. In any curriculum in any field, the *specific* understandings and abilities cited as objectives should be those which contribute *definitely* to the attainment of the general objectives of education. The general objectives most frequently cited in current educational literature may be briefly stated as: health maintenance; command of the fundamental processes; worthy home memberships; vocational, civic, and avocational efficiency; and ethical character.
2. Materials should be so organized as to center emphasis upon, and to make for mastery of, the relatively few major understandings and fundamental generalizations to be derived from the many facts and ideas presented.
3. Materials should be carefully graded on the basis of their relative difficulty.
4. In distributing emphasis among the various major understandings selected as worth while, the principle of relative values should be recognized and applied in so far as such values can be determined both logically and psychologically.
5. Materials should be organized coherently, and in such a way that the relation of parts to wholes, of minor facts and minor understandings to major understandings, is apparent in all cases.
6. Provision should be made for motive, initiative, and other worthwhile activity (both mental and motor) on the part of the child and of the teacher. Another statement of this same general principle is: "Material should be organized in terms of the learner's development."

2. Application of These Principles to Geography

1. In applying to the making of a geography curriculum the *first general principle* just stated, one derives the major objective of geographic instruction. Since the distinctive understandings that geography has to offer as its contribution to general education are interpretive

ideas concerning relationships between man and his natural environment, it follows that the subject matter of a geography curriculum should deal with the vital problem of man's adjustments to his immediate and world natural environments, so that the individual may acquire what he needs to live more effectively.

2. In applying to the curriculum in geography the *second general principle*, one must consider the types of major understandings and fundamental generalizations in terms of which the material should be organized. Such a consideration reveals three major types of geographic understanding: (1) about specific regions, (2) about specific types of human activities, (3) about specific types of natural environment. In accordance with this principle, materials in geography should be so selected and so organized that at each stage of development a few important geographic units with clear-cut major understandings are treated intensively in a given time rather than many topics that deal superficially with isolated ideas. This implies: (1) adequate presentation with a wealth of carefully selected detail and the use of much concrete material; (2) visualization—the imagination must be aroused; that is, the children should make the people's experiences in adjusting themselves to the specific natural environment a part of their own experiences, should vicariously experience the adjustments of a people to their natural environment; (3) selection of such facts, concepts, and ideas, both natural and cultural, as will lead to the development and mastery of the major understandings and fundamental generalizations.

3. In applying the *third general principle*, use must be made of all available evidence concerning the relative difficulty of the various types of major understandings to be developed. Findings from such analyses indicate that in order of increasing difficulty these types are the regional, the activity, and the natural environmental.¹ In further application of the principle of relative difficulty two conditions must be taken into consideration: (1) the apperceptive mass that a child brings to the mastery of the specific material being presented, and (2) the inherent difficulty of the idea itself; that is, the concreteness with which the idea can be presented.

4. In applying the *fourth general principle*, one must stress those ideas of a given level of difficulty which have the greatest functioning value. The social value of material has already been touched upon in

¹See Chapter VIII, Division VI, particularly summary of Subdivision 3.—*Editor.*

applying the first of the general principles, where the statement has been made that subject matter should be selected in relation to a functioning knowledge. Such social value may be determined by an analysis of man's use of geographic knowledge and tools in everyday life. Various studies have been made that assist in applying this principle. A second factor to be considered in selecting worthwhile major understandings is to determine what major understandings will have the greatest value in developing the ability of the child to think geographically.

5. In applying the *fifth general principle*, the units of geographic material should be so organized that there is a smooth transition from unit to unit. The introduction into each new unit should carry over helpful experiences from the previous ones, so that the child feels the continuity of the whole and the gradual unfolding of the major theme: that of how man is making use of earth resources and conditions. The relation of minor facts and understandings to major understandings should be apparent in all cases. This involves the admittance to a unit of only that material which contributes to an understanding of the interrelations of the human pattern and the natural environment. It seems in the light of results of analysis and experimentation, that, at early levels, the material should be so selected as to lead to an understanding of the geographical individuality of a region; at a more advanced stage, the material should be so selected and organized as to develop an understanding of a nation, such as the United States, in its relation to natural environment in all parts of the world; and in a still more advanced stage the understanding of an activity such as the production of sugar cane in its relation to the natural environment in all regions in which it occurs. There are so many interesting details about any region or activity that irrelevant material creeps in easily; strict adherence to a specific theme is necessary in order to maintain unity and coherence.

6. In applying the *sixth general principle*, varied activities with geographic tools should be provided for. Pictures, maps, globes, graphs, and other material as well as word matter should be used to secure information concerning an understanding of geographic relationships. The children's ability to read accurately and to interpret maps, graphs, pictures, etc., should steadily increase from unit to unit. Self-activity should be developed through leading the child to reason for himself concerning probable relationships between the human pattern and

the natural environment. Accurate and clear thinking should be developed through training the child to check his findings, correct his thinking, and summarize his conclusions. The children should gain in power to apply to new situations, understandings already acquired.

Through the application of the general principles, six principles for the selection and organization of materials for a geography curriculum may now be summarized.

1. Subject matter in geography should be selected in relation to a functioning knowledge of the interrelations existing between man and his natural environment.

2. Materials in geography should be so selected and so organized that, at each stage of development, a few important geographic units with clear-cut major understandings are treated thoroughly rather than many topics superficially.

3. All geographic materials should be carefully graded on the basis of their relative difficulty.

4. In determining the emphasis to be placed upon the various major understandings selected as worth while, the principle of relative values should be recognized and applied in so far as such values can be determined.

5. Materials in geography should be so organized that the relation of minor facts and understandings to major understandings is apparent in all cases.

6. The subject matter should be so selected and so organized, by means of careful study directions providing for specific but varied activities on the part of the learner, as to lead him toward mastery of the interrelations between the human pattern and the natural environment.

3. Practices and Tendencies in Current Courses of Study

Before formulating the elementary curriculum, the Committee wished to discover the practices and apparent tendencies in the selection and organization of geographic materials as revealed by current courses of study. A survey was made of state courses and city courses to determine what types of units seemed to appear in most courses of study. Following this casual survey a detailed survey was made. The Committee wished to determine how the course of study was organized; (1) whether geography was presented as a separate subject or com-

bined course, and (2) whether, if as a separate subject, it was organized on what we may call the modified one-cycle plan or on a two or more cycle plan.

By a 'combined course' is meant a course in which the units contain materials drawn from geography, history, civics, economics, etc.; by a 'modified one-cycle plan' is meant the treatment of the major regions of the world only once intensively, a treatment completed in the sixth, seventh, or eighth grade and followed by an intensive treatment of the United States from a world standpoint; by a 'two or more cycle course' is meant a treatment of all the countries of the world two or more times in the course. In some cases, for example, North America is studied every year from the fourth grade through the eighth. The purpose of the survey, then, was to find out to what extent each of these organizations is employed, and also something of the selection and placement of the major units.

A questionnaire was sent to the Department of Public Instruction in each of the forty-eight states. Three states—Maryland, Ohio, and Rhode Island—did not have state courses. Five states—Georgia, Montana, Virginia, Mississippi, and Nevada—did not answer. The same questionnaire was sent to seventy cities chosen arbitrarily from the list of larger cities. Fifty-five answers were received. In as many cases as possible the questionnaire was checked against the course of study. The exact dates of all the courses were not stated but all have been made since 1920, and the majority since 1925. Table I shows the results.

TABLE I.—ORGANIZATION OF FORTY STATE AND FIFTY-FIVE CITY COURSES
IN GEOGRAPHY

	Number States	Percent	Number Cities	Percent
One-cycle or modified one-cycle completed in 6th or 7th grade, in a few cases in 8th grade.....	21	52.5	35	63.6
Two-cycle course—studying every continent twice, or even three times	18	45.0	17	30.9
A combined, or social studies, course	1	2.5	3	5.5
Total	40	100.0	55	100.0

One can see that in the courses examined the two-cycle plan is no longer dominant, and that the predominance of the newer, modified one-cycle plan is much more marked in the city than in the state courses. This difference is to be expected, since cities change their courses more rapidly in accordance with changing tendencies in education than do

states. Tables II and III show that in the cases examined, the two-cycle plan is in the minority, except in the Southern States and cities and in the Western States.

TABLE II.—ORGANIZATION OF STATE COURSES WITH STATES GROUPED
ACCORDING TO LOCATION

State Groups	Modified One-Cycle	Two- Cycle	Com- bined	No Course	No Reply	Total
Northeastern States	6	2		1		
North Central States	7	2	1	1		
Southern States	5	7		1	3	
Western States	3	7			2	
Total	21	18	1	3	5	48

TABLE III.—ORGANIZATION OF CITY COURSES WITH CITIES GROUPED
ACCORDING TO LOCATION

Cities Located in	Modified One-Cycle	Two- Cycle	Com- bined	Total
Northeastern States	14	4		18
North Central States	13	5		18
Southern States	2	6	2	10
Western States	6	2	1	9
Total	35	17	3	55

A grouping of the cities according to population points to the conclusion that the size of the city has no certain effect on the organization employed.

Upon examining a large number of courses to discover the distribution of the major units, the units of organization were found to be chiefly continents and type regions. A unit such as "Life in the Amazon Valley" was called in one course a 'type study' and in another a 'unit in journey geography.' These two categories were both listed under the heading 'Type Studies' in the analyses appearing in Tables IV and V.

Some very definite conclusions may be drawn from Table IV concerning the grade placement of units. The tendency is to place Type Studies in the fourth grade, North America in the fifth, Europe in the sixth, South America in the fifth (cities) or the seventh (states), Asia in the sixth, Africa and Australia in either the sixth or seventh. The column marked "no report" indicates that in courses of the number shown grade placement for that particular unit was not indicated.

TABLE IV.—GRADE PLACEMENT OF UNITS IN TWENTY-ONE STATE AND THIRTY-FIVE CITY MODIFIED ONE-CYCLE COURSES

Name of Unit or Subject Matter Division	Group	3rd	4th	4th	5B	5th	6B	6th	7B	7th	8th	No Re- port
Type Studies....	State	1	3	11	—	2						4
	City	2		30	—	1						2
North America, or the United States and Canada	State			1	3	14	—	2	—	1	—	0
	City			5	—	29	—	1	—	—	—	0
South America..	State					4	—	4	1	8	—	4
	City					14	—	8	—	11	2	0
Europe	State					2	2	13	1	3	—	0
	City					2	—	28	—	4	—	1
Asia	State					1	—	8	1	5	1	5
	City					4	—	23	—	5	3	0
Africa	State					1	—	6	1	6	2	5
	City					4	—	15	—	11	4	0
Australia	State			—	—	1	—	6	1	6	2	5
	City			1	—	3	—	18	—	8	4	1
British Empire..	State					2	—	—	—	—	—	19
	City					—	—	—	—	—	—	—

To complete the analysis Table V shows the distribution by grades in all the courses examined. When a given unit is shown against more than one grade, as 4, 5, or 5, 7, 8, it means that that unit is studied in each one of the grades indicated; for example, Type Studies are located in both Grades III and Grade IV in eight state and six city courses of study.

Summary. This survey of existing courses suggests the following observations:

1. The modified one-cycle type of organization is becoming the dominant type both in the state and city courses analyzed.
2. This dominance is more marked in the cities than in the states.
3. Only one section, the South, shows dominance of the two-cycle plan in both state and city courses.
4. The tables show a considerable amount of agreement in the initial introduction into given grades of type studies, North America, Europe, and Asia, both in the state and city courses; they show less agreement concerning South America, Africa, and Australia.

TABLE V.—GRADE PLACEMENT OF EIGHT CHARACTERISTIC UNITS IN FORTY STATE AND FIFTY-FIVE CITY COURSES OF STUDY

(In Columns 2 to 9 the figures at the left show the number of state courses; those in parentheses at the right, the number of city courses, in which the unit is located in the grade or combination of grades listed in Column 1.)

Grade or Grades	Type Studies or Special Areas	North America or United States and Canada	South America	Europe	Asia	Africa	Australia	British Empire
3	4 (9)							
4	14(32)	1 (2)			(1)		1 (1)	
5	1	13(22)	4(15)	2 (2)	2 (4)	1 (4)	1 (3)	3
6	1	3 (2)	6(11)	16(31)	11(26)	8(23)	7(21)	5(12)
7		1	9(10)	4 (4)	5 (6)	8(10)	7 (8)	2 (1)
8			1 (2)		3 (4)	4 (4)	4 (5)	1 (1)
3, 4	8 (6)							
3, 4, 5	(1)							
4, 5	3 (2)	2 (8)			(1)	(1)	(1)	
4, 5, 6		(1)	(1)	(1)				
4, 5, 6, 7		1 (1)		1		1	1	
4, 5, 6, 7, 8				(1)				
4, 5, 6, 8				1				
4, 5, 7				(1)				
4, 5, 7, 8		(1)						
4, 6		4 (3)	1	1				
4, 6, 7		2 (1)						
4, 6, 7, 8			1					
4, 6, 8		1						
4, 7		1				(1)		
4, 8		1						
5, 6		2 (5)	1	1 (1)	1	1	1	
5, 6, 7		2	2 (1)	1	2	2	2	
5, 6, 7, 8		(1)						
5, 6, 8			1					
5, 7		4 (4)	7 (7)	7 (4)	8 (4)	8 (5)	8 (4)	
5, 7, 8		2 (2)	(2)	1 (1)	(2)			
5, 8		(2)	1 (1)	1 (2)	(1)	(1)	(2)	
6, 7			3 (2)	3 (1)	2 (2)	2 (1)	3 (1)	
6, 7, 8				1 (1)	1 (1)	1 (1)	1 (1)	
6, 8			1 (1)	(4)	1 (3)	1 (3)	1 (3)	
7, 8							(2)	
Not occurring	5	0 (0)	2 (2)	1 (1)	3 (0)	3 (1)	3 (3)	29(41)

5. A heavy load of material is shown in the sixth grade, as in so many of the courses all continents are studied then with the exception of North America.¹

6. Table V shows how varied is the grade placement when the two-cycle courses are included and how considerable is the amount of repetition. In two state courses, North America and Europe are studied in the fourth grade, then every continent is studied in the fifth grade, again in the sixth, and again in the seventh.

7. The omissions are interesting: one state course omits Europe entirely; two omit South America; three omit Asia, Africa, and Australia.

8. Three state courses frankly declare that they merely follow certain series of textbooks, covering the first book in the fourth and fifth grades, the second book in the sixth and seventh, and reviewing the whole of the second book in the eighth grade.

4. The Specific Application of These Considerations: Levels of Difficulty

The specific application of these considerations, together with the results of investigations and experimental studies, provided the bases for the formulation of the curriculum in geography.

At this point a word of explanation is desirable concerning the attitude of the Subcommittee on the Elementary Curriculum toward its work and its conclusions. This Subcommittee has examined with great care all available facts and theories bearing on the curriculum and its report represents *its best judgment*, wholly unbiased, concerning desirable procedures. It wishes to state frankly that objective proof concerning the soundness of its judgment on certain matters cannot be given. In no case, however, was any judgment made without thorough and unprejudiced consideration of all grounds presented for all the points of view involved, and in no case was a decision reached except upon bases that seemed to the committee to be sound. In so far as space permits, these grounds are in each case indicated. Space was not available for detailed reports of the diagnosis of each theory considered. For the sake of brevity, attention is centered in the report on those considerations that, *in the opinion of the Committee*, are most fundamental. Saving in space is gained in the report by not repeating time after time the phrase, "in the opinion of the Committee," or words to that effect. The reader's attention is called emphatically to the fact that, since this report presents the judgment of the Subcommittee, the phrase "in the judgment of the Committee" is to be read into the statement of each specific conclusion, even if omitted for the

¹ Some justification of this load may be found in the studies summarized in Chapter X, Division IV, 2.—*Editor*.

sake of brevity. With this qualification of each conclusion understood, no statement of the Subcommittee can be thought, with fairness, to be arbitrary.

The matter of the relative difficulty of various major ideas (previously mentioned in connection with the application to geography of the third general curricular principle) is a crucial one. Analyses that furnish grounds for decision as to relative difficulty are explained in Part II. In the light of such evidence as the Committee could secure with regard to relative difficulty, it seems that the illustrations that follow show distinct gradation from simple to progressively less simple types of major understandings, and are, accordingly, representative of different levels of geographic understanding. In so far as practicable, the added elements that make for increasing thoroughness of understanding at each level as compared with the preceding one are set off in italics. In some cases, as pointed out in Part III, difficulty hinges on magnitude of apperceptive background needed rather than on newness or abstraction of ideas. At no elementary level should an exhaustive understanding of the geographic individuality of a region be attempted, because exhaustive understanding involves complexities beyond the comprehension of young children. It seems essential, however, at earlier levels so to select and treat regions that they may be treated without giving any misimpressions about the whole that will have to be eradicated later. For example, if most of the outstanding adjustments which characterize a specific region are complex and only the simpler ones are treated, the child may be given a wrong impression of the whole. If, on the other hand, regions treated at the earlier levels are those in which the outstanding adjustments are simple, no such wrong impression is necessary. At later levels, regions having more complex characteristics can be introduced without danger of such wrong impression.

With these words of explanation we may now turn to the consideration of seven levels of difficulty.¹

a. Level One.—The major understandings of the simplest type to be used in the development of the initial concept of the world may be designated as of Level One difficulty.

The Amazon Region may be used as an example. The major understanding to be gained from a study of that region at this level may be stated briefly as follows: Things that people do in the Amazon Region are those suited to a low land of much rainfall where it is hot the year round because the noon sun is never far from overhead.

The same idea can be expressed somewhat less briefly and somewhat more concretely by saying: In the Amazon Region, the chief ways of earning a living, the placing of settlements, ways of travelling and kinds of food, clothing and shelter used are those suited to a low land of many forests, rivers, and insects, much rainfall, and weather hot the year round because the noon sun is never far from overhead.

¹For an extended discussion of these levels, *See* Chapter X, Division IV, 1 and 3. The reader should note also the footnote to Chapter XV, p. 219, signed by three members of the Committee.—*Editor*.

It can be expressed at considerable greater length but with even greater concreteness by saying: In earning a living chiefly by collecting and trading forest products, such as rubber and Brazil nuts, in travelling chiefly in river steamers and dugouts or along narrow trails, in depending for food chiefly upon fish and such crops as manioc and bananas raised by simple hoe methods in small cleared patches, in wearing little or lightweight clothing, in building houses with sloping roofs, in using tree branches, leaves, bark, and the like for building materials, and in doing the various other things they do, *people of the Amazon Region are making use of or putting up with the things they find in this land* where the forests cover vast areas, where most of the land is low and almost level, where streams, both large and small, are many, where insects are troublesome, where fish are plentiful, where land is difficult to clear and to keep clear, where rainfall is heavy, and where it is always hot because the noon sun is never far from overhead.

b. *Level Two.*—The following statement expresses a major understanding of Level Two difficulty:

In the part of the United States commonly known as the 'Cotton Belt,' *population is moderately dense*, in part because the region is chiefly an agricultural one, in which cotton and corn are the leading crops, and because farming of this type is suited to the long summers, abundant summer rainfall, and other natural conditions found in most parts of the region; most of the more densely settled sections of it are those in which are found better conditions for such farming or for trade and manufacturing based on it, and the methods of work and other things people do are in keeping with the things they find to use there or to put up with as best they can.

c. *Level Three.*—An elementary understanding of the geographic individuality of France will exemplify a Level Three understanding of the first type, thus:

The moderately dense population of France as a whole, the denser settlement of the north central and northeastern parts, the importance of France as an agricultural, manufacturing, and commercial country, and its reputation for skill in manufacturing and arts, are partly explained (1) by the varied ways in which people have made adjustments to the different conditions they have found in six regions of their country, each differing from all other regions, (2) by the part which the work in each region plays in the work of the country as a whole, and (3) by the natural features of the country as a whole, such as its central plateau, the lowlands entirely surrounding it, and its location in middle north latitude on the Mediterranean Sea, the Atlantic Ocean, and the English Channel, and near the western end of the interior lowlands of Europe.

The understandings of this third level of difficulty are concerned with two types of regions: (1) regions where the work activities are complex, and where what the people do and the way they live depend to some degree upon natural and cultural factors outside their imme-

diate natural environment; (2) regions where such abstractions as low standard of living, religious ideas, and other more abstract human characteristics affect the people and their activities and consequently affect the way the people make use of their natural environment. France is an example of the first type, and Japan is an example of the latter.

This statement expressing a major understanding of Japan will be sufficient to give the idea involved.

The major understanding to be gained from a study of Japan is a realization of how the dense agricultural population, almost self-supporting in the matter of food, the raising of grain (chiefly rice), the fishing industry, the recent rapid development of trade and manufacturing, the dominance of silk in the export trade, the rise of Japan as one of the more important countries of the world, the low standard of living, and other distinctive human items are related to a natural environment in which the important factors are: island character, location in the Pacific near the Asiatic mainland, great extent in latitude, nearness to good fishing grounds, a large percentage of mountainous land, many forests, scarcity of good farmland, scarcity of good grassland, much rainfall, long growing season in most of the islands, many good harbors, some coal although of poor quality, and water power. Japan is seen, also, as a land where former isolation has helped to result in overcrowding, in very intensive use of some resources, and in failure until recently to take advantage of some of the opportunities which its natural environment affords.

d. Level Four.—Understandings of the fourth level of difficulty hinge on the greater complexity of the geographic individualities of countries where a transplanted ruling people make up a considerable part of the population, but where native peoples also are playing a large part in the life of the country. Central America may be taken as an example, thus:

The rather sparse settlement of Central America as a whole, the irregular distribution of people in it, the denser settlement in the highlands, the importance of agriculture for subsistence and of grazing for native peoples in the more isolated remote areas, the importance in less isolated and remote sections of plantation agriculture managed chiefly by people not of native origin and concerned with the raising of coffee, bananas, and the like, the development of minerals and other resources, the rather meager development of the resources as a whole, the division of the area into separate small countries, and the second-rate standing of the countries with regard to world power, are partly explained (1) by contrasting ways in which the native peoples and those not of native origin have used, or coped with, the natural conditions they have found in each country, (2) by what each country has contributed to the development of the group as a whole, (3) by the mountainous character of the area as a whole, its coastal lowlands, and its location in low latitudes and

in the narrow part of North America, and (4) by the natural features and conditions in the homelands of the transplanted peoples that influence their methods of work and their part in the development of the group.

e. Level Five.—Here the major understanding is on a world basis. It concerns a region or a nation placed in its relation to the world natural environment. Such a major understanding may be illustrated as follows:

The standing of the United States among world powers is accounted for in part by natural conditions in many parts of the world. For example, conditions that explain why men in many lands use large quantities of cotton cloth help one to see why men that manufacture such cloth have a market for it; natural conditions in lands where cotton cloth is manufactured from the raw cotton of the United States help one to see why those lands need our cotton, why they can pay us for it, and why we, therefore, have that market for it; natural conditions in other lands where raw cotton is produced help to explain why our market for it is not larger than it is; natural conditions in the United States help to explain why we have cotton to export; the amount of our cotton export helps to explain the amount of our total trade, which in turn helps to explain our part in the world affairs upon which our standing among nations is in a large measure based.

f. Level Six.—The typical major understanding on the sixth level has to do with an understanding of how the world's commercial pattern is related to natural factors and conditions throughout the world through the activities involved in producing and transporting the major commodities entering world trade. Stated in sentence form, the understanding may be expressed as follows:

The nature, amount, distribution, and conduct of world trade in raw silk is accounted for in part by natural conditions in many parts of the world. For example, conditions that help to explain why men in certain lands use large quantities of silk goods help one to see why men in countries that manufacture silk goods have a market for it; natural and cultural conditions in lands where there is manufactured raw silk bought from the countries of southeastern Asia help one to see why people in those lands desire the raw silk, why they can buy it, and why, therefore, the producing countries have a market for it; the natural and cultural conditions in the producing lands help to explain why there is produced there a surplus for export; the amount of raw silk exported helps to explain the trade of southeastern Asia and its part in the pattern of world trade.

g. Level Seven.—One of the two types of major understandings developed at the seventh level is concerned with *how* the internal and external political problems and activities of nations are related to the

environment in all parts of the world with which these nations have to do.

For example, the problem of pressure of population in Japan, along with the development of a mechanical industrial system, has created many internal problems of a social and economic nature, which in turn have reacted upon the political system and created internal political problems. These internal problems are all related more or less directly to the natural environment of Japan—small percentage of arable land, comparatively meager natural resources of coal and minerals, location in respect to the Asiatic mainland, and the like. However, today the whole world is so interrelated that these problems do not remain internal Japanese problems. To relieve pressure of population, to secure food supplies, to secure coal and iron, Japanese leaders look toward Asia. Manchuria, with its huge fertile plains, its forests, its rich mineral deposits offers a partial solution to Japan's problems. But other nations are interested also in Manchuria; consequently international problems arise. This is only one example of the innumerable problems involving governmental activities that have world-wide political significance and that basically arise out of man's attempts, wisely or unwisely, to adjust his ways of living to the natural environment.

The Committee believes that, through the careful selection of a group of regions so treated that at the various levels understandings of the types illustrated are derived, children can be led to gain a gradually broadening and deepening idea of how the various aspects of the human pattern of the whole world are related to the natural environmental pattern of the world. At the end of the seventh level the child could have been led to see the world in these seven aspects:

- a. of regions located at varying distances from the equator;
- b. of human-use regions, each characterized by specific adjustments to the natural environment;
- c. of countries, each one characterized by outstanding adjustments to the natural environment of the country;
- d. of expanding centers and the regions into which the activities have been extended;
- e. of regions in which the human activities are related not only to the natural environment within the region but also to the natural environmental conditions in other parts of the world;
- f. of regions delineated in terms of specific activities—the location, extent, and conduct of that activity in each region representing adjustments to natural conditions within that region and in other parts of the world; and also as made up

- g. (1) of regions with specific types of political problems related to natural conditions in the regions and in other parts of the world, and (2) of regions with specific types of natural features and conditions, each region being characterized in terms of major human adjustments to the outstanding natural features and conditions.

The aspect just designated as 'a' could have been gained by the end of Level One; that designated as 'b' could be added in Level Two; the 'c' aspect in Level Three, and so on.

5. Considerations of Functional Value

At all times since geography has been introduced as an elementary subject, the feeling has been manifested by textbook and curriculum writers that an initial concept of the world like that indicated by 'a' in the preceding paragraphs functions so vitally in later work that it is needed at or near the outset of the study of geography. Nor has there ever been exhibited any tendency to question the outstanding importance to American citizens of knowledge of the geography of their own country.

Statistical studies indicate that knowledge of the geography of Canada and of countries of Europe and Asia functions to a greater extent in the consideration of American problems than does knowledge of Latin America, while knowledge of Africa and Australia is of relatively less importance in American problems than is knowledge of Latin America. Two points of view concerning the relationship of functional value to order of introduction are discussed in Section II.

CHAPTER XV

GEOGRAPHY IN THE ELEMENTARY SCHOOL¹

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I. THE PRIMARY GRADES

Systematic geographic study, according to present practices, as summarized in the preceding chapter, begins usually in the fourth grade. However, since many inquiries have been made concerning related work in the primary grades, a brief discussion of that is necessary. The general tendency in education to-day is to integrate the work in the primary or early elementary grades and to have no strict subject-matter divisions. The chief objective of the primary school is to develop skill in the use of the fundamental tools of learning; namely, ability to read, write, and use numbers in simple computation.

¹ The material in this chapter represents a report prepared for the Society's Committee on Geography by a subcommittee of the authors listed, with the co-operation of Myrta McClellan, of the University of California at Los Angeles, and of Edna Eisen, of Milwaukee, Wisconsin. As explained in the Chairman's Introduction to the Yearbook, the Society's Committee has discussed carefully the reports received from its several subcommittees, has suggested changes, and has sought compromises for what conflicting points of view there appeared to be. In the main, therefore, these reports of subcommittees on curricula have the endorsement of the Society's Committee, although certain members of that Committee extend their endorsement with reservations as here noted.—A. E. P.

In view of the present-day uncertainty in the fields of educational psychology and educational theory, the undersigned members of the Yearbook Committee believe that the philosophy of levels of learning in geography set up in the discussion of the curriculum in this Yearbook is largely in the realm of the controversial and of necessity must be experimental and tentative, only. We think that there is a definite trend in practice toward the completing of a world view in the elementary school. It is our belief, therefore, that the insistence of the elementary-school and junior-high-school committees that the only proper place for a study of the southern continents is in the first year of the junior high school is arbitrary and untenable. For this reason, we think that alternative programs taking this point of view into account should have been offered without prejudice.

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These skills may be developed, of course, by various methods, but the consensus seems to be that they should be developed through interesting and concrete experiences with the children's own environment, both cultural and natural. Through a series of purposeful activities that are rich in meaningful experience and accurate intellectual content, the children come into contact with some of the major fields of human achievement, have their eyes opened to, and their interest aroused in, many things going on about them, and, by using tools in getting this experience, secure practice in building desirable habits, interests and skills. In connection with these activities and through observation directed by the teacher, the children may become familiar with some of the natural and cultural items of the home environment. If children are trained to think clearly and accurately about commonplace, everyday conditions in their immediate environment, they will secure many clearcut concepts, a rich background of concrete experience, and a vocabulary to express these experiences that will be of value when the regionally organized materials are presented in the intermediate grades.

Some of the topics that may be considered in this primary period of experience-getting are here briefly set forth. They are not presented as an organized body of experiences to be given as a separate subject or to be isolated from the larger group of experiences. Some of them have to do with observations of nature, some with observations of activities of people, and some with relationships between the two. There is no attempt, however, to weave these observations into a whole from which geographic generalizations are to made. They remain as items in a larger group of general experiences designed to motivate the gaining of ability to use tools. Even if they are so isolated, they are not designed to result in anything other than enrichment of general experience.

Nine topics may be mentioned here as indicative of what may be considered in the primary grades.

1. The facts of day and night, observed from time to time throughout the year, lead to a knowledge of the relationship of daily activities in the home locality to these facts and enable the pupils to understand such relationships in the lives of other people.

2. Observations, made at intervals during the year, of the path of the sun across the sky give an understanding of the relationship between the changing position of the sun in the sky and the various daily activities of man throughout the year.

3. The annual march of the seasons in the home locality may be observed, and its relations to plant life, animal life, and human life of the community noted. Such study has immediate value in broadening the pupil's thinking and furnishes ideas that are basic in later studies and comparisons.

4. The observation and interpretation of the ever-present, ever-changing weather conditions throughout the year in the home region furnish concepts that lead to an understanding of natural phenomena often casually named and discussed. Observing local weather and climate and their beneficial or deterrent influences leads one to realize the fundamental importance of climate in the study of any region.

5. Seeing that fertile soil in the gardens and on the farms of the locality is essential to the growth of good crops assists the pupil to understand the value of fertile soil in the home locality and elsewhere.

6. Numerous natural features are found in miniature in any locality where bare earth is exposed to the action of sun, wind, frost, rain, and running water. Pupils may observe, on a limited area of bare earth, actual illustrations of streams, tributaries, flood plains, meanders, divides, deltas, distributaries, lakes, cliffs, shore lines, islands, peninsulas, and other features. A field lesson for the observation and interpretation of such features and of their relation to the larger but similar features of the local region helps to prepare for correct and vivid visualization of the real features of the earth on a larger scale.

7. A study of the larger land forms of the local area yields simple, interesting, direct geographic relationships. The more level lands are devoted to crops, and the more rugged lands to pasture or forest. In a village or city the homes are built on the ridges where drainage is good, while low areas along streams, subject to flood, are not occupied by buildings. In a level region highways and railroads extend along straight lines, while in a rugged or mountainous area they make frequent curves or wide detours from a straight line. These and other observed relationships form a desirable basis of understanding as later reading or travel widens the horizon of the pupil's geographic knowledge.

8. Domestic water supply is of vital importance in any locality, whether farm, village, or city. A knowledge of the source of the local water supply and man's labor and ingenuity in bringing it from the source of supply to the homes is of immediate interest and value and becomes a basis of comparative study for other localities.

9. The common necessities of life—food, clothing, shelter, fuel—are of direct interest to everyone, and some aspects of their production and use may be treated simply in this preliminary phase of experience-getting.

The chief point to be made concerning primary work is that such observations do not constitute more than a few simple aspects of the geography of the local community, not 'home geography' in the sense in which that term is used in the science of geography, where it indicates the more complex understanding of the geographic individuality of the home region, as explained in Chapter IX. It does not take the place of such a unit as is needed in the organized study of geography in Grades V or VII.

II. THE FOURTH GRADE

1. Levels of Difficulty and Type of Relationship

In the fourth grade is presented the series of units of Level One difficulty. Through these the child is confronted with direct, simple geographic relationships that are both interesting and comprehensible to him and that can be understood and expressed by the use of tools he can manipulate readily.

2. Major Understandings to Be Gained

With the considerations already discussed in mind, the following major understandings, are set up for the fourth-grade program:

1. An understanding of relationships of food, clothing, shelter, means of travel, and simple types of work, where a few natural facts, such as marked aridity, are outstanding and where much of what people do is explained by such striking natural facts.
2. An initial understanding of the world, based on the relation of simple human activities to simple types of natural environment at varying distances from the equator.

It is to be noted that these understandings involve only relationships between *kinds* of work, play, and living on the one hand and outstanding features of the natural environment on the other hand: such human items as distribution of people and of work are not included.

The major abilities, habits, and attitudes to be attained in this grade are discussed in Chapter XVI.

3. Fourth-Grade Programs

The Committee believes that the main points to be kept in mind in planning a fourth-grade program are (1) that there should be included

in it representatives of regions in very low latitudes, in less low latitudes, in low middle latitudes, in middle middle latitudes, in high middle latitudes, of polar regions, and of regions in both hemispheres; (2) that these regions should be such that most of the things people do in them are related directly and simply to a few very outstanding natural facts; and (3) that progression through these regions in a northerly or southerly direction is desirable in helping a child to see gradual changes in seasons and length of day and night. One may begin near the equator and move poleward, or begin in middle latitude and move equatorward and then poleward, or first poleward and then equatorward, to give experiences with both equatorward and poleward changes. It is, perhaps, less desirable to begin in polar latitudes and move equatorward, because day and night and seasonal conditions in very high latitudes are more unlike what the child has experienced and somewhat more difficult for him to visualize accurately at the outset. When approached through gradual change, the difficulty seems largely to disappear. It seems important that the general order of progression through a series of units should be determined before the units are planned in detail, because every unit should be planned in terms of the child's background and if the order is such that a given unit is third in the list, for example, the treatment of that unit should differ distinctly from that which it would receive if it were first or eighth. *The following arrangements do not exhaust the possibilities;* they are offered merely to *illustrate* various types of arrangement that seem to the Committee desirable. The lettering indicates no preference; they are merely alternative procedures, arranged to show the three types mentioned. It may be desirable to give experience with two rather similar regions of some one or two types in order to let children see that when people much alike live in places much alike, they tend to do rather similar things. The regions in the programs presented are in the Northern Hemisphere for the reason that more regions meeting the requirements for very simple treatment are found north of the equator. Theoretically most of them might as well be chosen from the Southern Hemisphere and only one or two from the Northern be introduced to show contrasts; actually it has seemed difficult to find suitably simple and varied regions in the Southern.

Transitions from one region to the next may be made helpfully in terms of significant things one would see enroute if the regions do not actually adjoin. The significant things to note in such linking travels

ILLUSTRATIVE TYPES OF ARRANGEMENT OF A FOURTH-GRADE PROGRAM

A	B	C
Moving from fairly low latitudes to the Polar North and then southward to the Polar South.	Moving from very low latitude to Polar North and then to Polar South	Moving from low middle latitudes equatorward, then toward south pole
The Sahara and its Oases	The Congo	Mesopotamia
Mediterranean Coast	The Sudan	The Sahara and an Oasis
Lands	The Sahara	The Congo
Switzerland	The Holy Land	
The Netherlands	The Netherlands	Mediterranean Coast
Lapland	Norway	Lands
North Polar Region	The Polar North	Switzerland
Either	Either	The Netherlands
Eskimos in North America	Brittany	Norway
Glimpses of our Arid Southwest	Glimpses of the Karroo	The Polar North
Amazonia	South Polar Region	Glimpses of the Southern Hemisphere
Antarctica	World View	Antarctica
World View	Or	World View
Or	Northern Siberia	
Greenland	South Sea Islands	
The Amazon	Glimpses of South Australia	
Tierra del Fuego	Antarctica	
Antarctica	World View	
World View		

are, of course, those that indicate gradual changes as one goes from one latitude to another. These in-between links are a vital factor in building the view of the whole. The regions mentioned in these programs are typical of those that serve the purpose; if others are introduced, care should be exercised to see that they are equally rich in simple, direct relationships to a few very striking and readily understood natural features and conditions. Until late in the year's work, the child should think in terms of changes to the north and changes to the south rather than in terms of changes with latitude. Terms such as 'equator,' 'poles,' and 'latitude' may be introduced more effectively after the child has seen north-south changes that give significance to these terms.

4. An Illustrative Fourth-Grade Unit

The following unit has been adapted from a unit taught in the fourth grade of the Training School at the Bemidji, Minnesota, State

Teachers College.¹ The entire unit could not be included because of lack of space.

Major Understanding: The people of Switzerland have adjusted their ways of living to a land of high mountains, many lakes and rivers with numerous waterfalls, many forested slopes, rich valley and mountain pastures; a land of cold winters, cool summers, abundant rain or snow, with the noon sun higher in the southern sky in June than in December, and with no coast. As a result of so doing, they live in sloping-roofed houses of logs or stone; wear heavy clothing in winter; use dairy products, potatoes, and rye as their chief foods; travel by railroads and highways that follow valleys; make their living by caring for summer tourists, acting as mountain guides, raising dairy cattle, using the valley lands for rye and other crops that will stand the cool rainy summers, carving articles from wood, and using water power for manufacturing.

Examples of some relationships to be developed to reach the major understanding:

Building houses of wood and stone	_____	Mountainous land heavily forested Building stone at hand
Food—potatoes, rye, cheese, vegetables, milk	_____	Cool, rainy summers, fer- tile valley lands, and mountain pastures
Use of valleys for high- ways and railroads; use of mountain passes	_____	Steepness of mountains, many stream valleys and natural mountain passes

Facts and terms to be understood: map symbols for mountains, glaciers, passes, tunnels, and lakes.

Terms: 'glacier,' 'mountain pass,' 'tunnel,' 'avalanche,' 'alp,' 'white coal,' 'snowfield.'

Place names to be mastered (mastery means ability to pronounce, spell, point to on the map, and give at least one associated fact or geographic relationship): Switzerland, Alps, Rhone River, Rhine River, Basel, Lucerne, Geneva, St. Gothard.

Motivation: A number of pictures showing such scenes as cattle grazing, men harvesting hay, tourists climbing a mountain, a glacier, a forested slope, a railroad following a valley, and a Swiss home were displayed. These pictures showed scenes and activities typical of Switzerland and the Swiss. The children studied these pictures to find some things the Swiss people are doing or have done, or to find three things that help the Swiss to earn their living in this mountainous land. The pictures were used also as a basis for asking questions.

¹ Roy Schofield, Department of Geography; Agnes Anderson, Training Teacher Elementary Department; Esther Schroeder, Training Teacher Elementary Department.

The class studied the pictures and made observations or asked questions that the teacher listed on the blackboard under such general headings as (1) our trip to Switzerland from the last region studied, (2) location of Switzerland, (3) how one may travel within the country, (4) type of people seen, (5) Swiss homes, (6) the work of the Swiss, (7) scenery of Switzerland.

Each one made a guide notebook that was to be a diary of the trip, copying in the questions from the board that he hoped to answer on the trip.

Development: The following lesson is an illustration of the procedure used in developing a part of the unit.

Aims: (1) To show how the people have adjusted their ways of travel to the mountains; (2) to develop an understanding of the terms 'Alps,' 'tunnel,' 'pass,' and 'white coal'; (3) to introduce the map symbols for mountains, snowfields, glaciers, railroads, tunnels, and roads.

Materials and assignment: railroad folders showing mountain roads, and pictures from the available texts showing mountain roads and scenery.

Directions for study and questions: Yesterday we arrived at Basel in Switzerland. Let us pretend that we arrived at night so that we had no chance to see the nearby country. As we travel through the country we may see things similar to these [certain figures selected from the text].

Study the pictures to find how highways and railroads are laid out. What difficulties do you think are met in travel, highway building, and railroad building? Why? How many of the pictures show mountains? What does this suggest about Switzerland? Do trees grow to the top of most of those shown? What does this suggest to you about their height?

Teacher calls attention to new map symbols that represent the pictures shown: mountains, snowfields, glaciers, railroads, tunnels, roads, and mountain pass. Match pictures with map symbols.

Emphasize these facts and relationships: (1) Roads and railroads follow the lower places along streams and lake shores. (2) Roads and railroads wind gradually up mountain slopes. (3) They use the passes between mountains. (4) Tunnels are cut through the steepest and most dangerous places where there are no passes. (5) Tunnels are of two kinds, straight and spiral.

Seat Work: Study the reading material to check ideas gained from the pictures and map and to find new facts about why the Swiss people live as they do.

Match the parts from these two columns:

- | | |
|---|---|
| 1. Most of the railroads follow river valleys because | 1. passageway through a mountain. |
| 2. A pass is a | 2. tall mountains in Switzerland. |
| 3. A tunnel is a | 3. pasture land in a high valley or on a mountain slope. |
| 4. The word 'alp' means | 4. the river valleys form the best natural passageways among the mountains. |

5. We usually connect the word 'Alps' with 5. natural opening between mountains.

Put the above test in the diary notebook.

Every unit developed in the fourth grade should be checked carefully to see that it is making definite contributions to the specific objectives stated for Level One, especially the contributions listed for the development of the world concept. The attainments listed in Chapter XVI may be used as a guide for developing definite tests to measure the outcomes objectively.

III. THE FIFTH GRADE

1. Level of Difficulty and Types of Relationship

The units of Level Two may be allocated to the fifth grade. By the time the children have reached this grade they should have gained the ability to recognize and to think in terms of man's relationship to natural environment.

Some of the relationships to which the pupil may now be introduced are less simple and direct than those in the fourth-grade units. Stress may be laid, for example, on relationships dealing with man's work and also distribution. Relationships pertaining to food, clothing, and shelter continue to play a part—although a minor one in comparison with that played by relationships concerned with work of various kinds and with the types of places in which specific kinds of work are carried on. However, where direct relationships occur between specific types of food, clothing, shelter, and means of travel on the one hand and the immediate natural environment, on the other hand, they are to be mentioned. The point is, not to waste time teaching what the children already know. Moreover, as a result of the numerous experiences gained in units of Level One, the children, themselves, should be able to point out such relationships as soon as they recognize the cultural features; *e.g.*, sod houses on the plains, the adobe homes of the Pueblo Indians, or irrigation ditches, and the associated natural features.

It seems best to this committee to treat at the second level, which probably corresponds to fifth-grade work, the adjustments man is making to his environment in the United States and Canada. The units are selected from the United States and Canada for two reasons: (1) they seem to serve as well as any in developing the types of relatively simple relationships that can be understood at this level; (2)

it is important for the child to gain a knowledge of his homeland at as early a stage as practicable.¹

2. Major Understandings to Be Gained

Five major understandings are set up for the fifth-grade program as follows:

1. An understanding of how the major work activities and the distribution of population in specific regions in the United States are related to the natural environment in these regions.
2. An understanding of how in outlying parts of the United States the work of the people differs from that in the United States proper, in part because the natural environment is different. As a result some products needed in the United States are produced in these outlying parts and are shipped to the United States.
4. An understanding of how the sparse population of Canada, the concentration of this population in the southern section, and the work activities of the people similar to those found in the northern part of the United States are related to a natural environment similar to that of northern United States; also how the sparse population of Indians, hunters, and trappers and the slight development of northern Canada are related to its high latitude, its forests, and the abundance of native animal life.²
5. A concept of the world as made up of special 'human-use' regions, each characterized by certain outstanding uses of the natural environment.

The major abilities, habits, and attitudes to be attained in this grade are discussed in Chapter XVI.

3. Fifth-Grade Programs

This Committee believes that the main points to be kept in mind in planning a fifth-grade program are: (1) that regions characterized by some outstanding type or types of human activity that differentiate them from other regions should be depicted; (2) that the more complex these types are, the later they should be introduced; and (3) in each region the relation of the outstanding work to other activities in

¹ See Note 1, page 245.—*Editor*.

² It is to be noted that in these units it is proposed that *distribution items* as well as kinds of activities be interpreted. Distribution of people is related to distribution of activities, and those in turn are related to distribution of natural features and conditions.

the region should be shown in such a way as to give a balanced idea of the various aspects of life in it. Care should be taken to avoid the idea of sharp boundaries between human-use regions, since in most cases zones of gradual transition join one such region to another. It is immaterial how particular states presented on the various detailed maps are grouped—whether Texas, for example, is included in a group labelled Central Southern States, or in one including the Middle West. The significant thing is that one sees the human-use regions or parts of human-use regions that together constitute the states in whatever group is presented. It is not essential that one see the whole of a human-use region the first time he comes in contact with it. He may see, for example, that the western part of the group of states presented belongs to a human-use region of Type A, and that the southwestern part of the next group of states presented belongs to that same region. Accordingly, in the programs presented as illustrative of alternative procedures, the state groups differ, and under each such group are indicated human-use regions or parts of human-use regions that together make up that group.

As in the fourth grade, it is essential to plan the order of general procedure definitely before any individual unit is worked out, in order to base each unit on the background the child brings to it.

The Mid-West may be the starting point and progress made from it first to the west and then to the east, culminating in the Northeast; the Far West may be the starting point, moving in turn to the Mid-West, the Southeast, and the Northeast. The Mid-West may be a starting point, moving from it to the Southeast; then to the West, and to the Northeast. If the Southeast or Northeast is introduced first, when children have inadequate background for explaining the numerous multi-step relationships involved, only certain aspects can be treated effectively, and various questions raised can be answered only after other regions have been understood. Another final treatment of those regions would thus be necessitated.

It may be noted that in each of these programs the first unit is a region where the work activities of the people are comparatively simple and directly dependent upon some items or conditions in the immediate natural environment. There is also the necessity of noting that within this level, just as in Level One, there is a gradation of difficulty; first is developed the major understanding or 'geographic personality' of human-use regions of a relatively simple type; then later, one of a

ILLUSTRATIVE TYPES OF ARRANGEMENT OF A FIFTH-GRADE PROGRAM

A	B	C
<ol style="list-style-type: none"> 1. The Plateau States Part of a region of scattered mining, grazing, and irrigation farming settlements 2. The Pacific Coast States Part of the region in 1. Other localized logging, fishing, and humid and irrigation farming areas 3. The Mid-West States Grazing region Parts of farming regions, winter wheat, spring wheat 4. The Southern States Cotton-corn region Rice-sugar region East-coast trucking region Farming-mining mountain region 5. The North Central States Mixed farming region Manufacturing 6. The East Central States Iron and steel manufacturing Mining of coal Truck farming Commercial areas 7. The New England States Manufacturing and commercial areas Fishing Quarrying in local region Market gardening areas around cities and dairying 	<ol style="list-style-type: none"> 1. The Mid-West States Grazing region Parts of farming regions Winter wheat Spring wheat 2. The West Scattered mining, grazing, and irrigated farming settlements Localized logging, fishing, and humid farming areas 3. The South Central States Cotton-corn region Rice-sugar region 4. The North Central States Mixed farming region Manufacturing 5. The Southeastern States Cotton region East-coast trucking region Farming and mining in mountains 6. The Northeastern States The mining and manufacturing regions The maritime and manufacturing region Dairying, fruit, and truck-farming regions 7. Survey of the United States 8. The Possessions of the United States The tropical agricultural regions The mining and fishing region of Alaska 	<ol style="list-style-type: none"> 1. The Pacific Coast States Irrigated farming Localized logging, fishing, and humid and irrigation farming areas Some mining 2. Mid-West States Grazing region Parts of farming region Winter wheat Spring wheat 3. The Southern States Rice-sugar regions Cotton-corn regions East-coast and Florida truck farming and fruit region Farming-mining in mountain region Localized manufacturing areas 4. The North Central States Corn and mixed farming region Manufacturing and trade region along Great Lakes 5. The Northeastern States Manufacturing region Mining of coal Commercial centers Specialized types of farming 6. Possessions of the United States Tropical agricultural regions The fishing, logging, and mining regions of Alaska 7. Summary of the United States

A	B	C
8. Our Possessions Regions of tropical agriculture The mining and fish- ing region of Alaska	9. Canada Logging, mining, and trapping regions in the north The mining, farming, grazing, lumbering, and fishing region of the west The prairie farming region The trading and manufacturing region of the St. Lawrence The fishing and mining region of the east	8. Canada Logging, mining, and trapping regions in the north The mining, farming, grazing, lumbering, and fishing region of the west The prairie farming region The trading and manufacturing region of the St. Lawrence The fishing and mining region of the east
9. Survey of the United States		
10. Canada (as in B and C)		

more complex type, in which the relation of density of population to types of work is introduced, and finally the major understanding of the United States as a whole and of Canada. Thus the way is prepared for Level Three.

Another point to be noted in connection with fifth-grade work is the possibility of introducing a study of the local area or even the home state in connection with the region wherein it is located. However, such a study should be strictly on the second level; that is, a study of the work activities of the people and the distribution of the population in relation to the local natural environment or to natural environment in other parts of the United States.¹

4. An Illustrative Fifth-Grade Unit

There follows a unit that shows how material can be treated in a fifth-grade program.

Class Instructions: On the outline map on which you have colored other parts of the United States, color the nine Northeastern States (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania).

As you look at the map of the United States, what differences do you notice on this map between this group of states and the other groups of states? (Smaller size and a larger number of cities.) If there are a large number of cities, what does that suggest to you? Look at your population map and the map showing the distribution of cities. Do these maps verify your suggestion? Count the number of cities in the Northeastern States that

¹See Note 2, page 245.—*Editor*.

have a population of more than one hundred thousand. Compare this number with the number of cities of this size in each of the other groups of states we have studied. Now, what statement can you make definitely about the population in the Northeastern States? What question does this suggest? (Why are there more large cities and more people in this section?) Before trying to find an answer to this question, look again at your map showing the distribution of cities. What is another thing that the map shows you about these cities? (Concentration in specific spots.) What states have very few cities and a much less dense population? (Maine, New Hampshire, and Vermont.) What two questions do these facts suggest to you? (Why are the cities concentrated in these specific spots? Why do Maine, Vermont, and New Hampshire have few people in comparison with the other states?)

To see why people are distributed as our maps indicate, we look, of course, to see how the people are earning their livings. Look at these pictures and list the ways the people seem to be making a living. Opposite each way of making a living you find, put down anything you see in the picture that suggests to you a reason for the people doing that particular thing. For instance, what do you see in this picture that suggests a way of making a living? (A picture of a large hotel on the shore of a lake, boats on the lake, and a mountain in the background.) What in the picture suggests why people like to come to this section in vacation time? (The pupils suggest the lake, the mountains; and, as there are mountains, the summer climate may be cooler than in other neighboring places.) Look on your map and see whether you can find anything that verifies what you have said. (They find some lakes and the mountains; one pupil suggests the ocean, also, as a factor.)

Now look at each of the pictures that are here for you, and do the same thing with each picture. As you finish with a picture, put it back where others can get it for exchange with some one. If you cannot find anything in a picture that explains what the people seem to be doing, leave a blank space.

The pictures given to the children, mounted but with no legends, were as follows:

1. Picture like the one mentioned above and several others showing winter and summer sports in these states
2. Agricultural pictures showing a dairy farm, a potato farm, a tobacco farm, and crops on other types of farms
3. A picture to show a New England type of farm house and one more characteristic of Pennsylvania and New York
4. A factory located on the falls of a river, and also one showing the factory section of a city
5. A lumbering scene
6. A paper-pulp mill
7. A picture of a quarry and one of a coal mine
8. Two or three fishing pictures—a fishing vessel, drying fish
9. Several pictures showing docks, wharves, vessels coming into harbors

Others might be added to this list but each picture was selected to show a specific, outstanding type of human activity in its natural setting. An hour or more was given to this activity; then the class was called together for a discussion and comparison of what they had found. At this stage the map was again used to find on it, if possible, any sign of either the specific activity named or the natural item or items that the children thought helped to explain the specific activity. At this time some of the children said that they were surprised to find tobacco grown in this region, when they had found it in the Southern States, as they didn't think that the growing season would be long enough. The teacher then told them that another unusual crop was raised, and showed them a picture of a cranberry bog and had them locate the cranberry section, Cape Cod, on their maps. This picture had not been included in the original set, as the teacher knew that the pupils would not recognize the activity or many of the items in the picture.

From this picture study the class saw that in the less densely settled areas taking care of visitors, fishing, lumbering, quarrying, and farming were the chief ways of making a living, while in the more densely settled places there were numerous signs of mining, manufacturing, and trade.

The class then turned to their texts and reference books to find out more definitely where these kinds of activities were carried on and to discover all the reasons they could that would help to explain each activity. They also were to note any new ones. Another activity was to make a list of the articles manufactured in these states that they found advertised in magazines.

As the study continued, some of the items that raised questions for which the class sought answers were: How manufacturing started in the New England section. How the rivers, the ocean, the forests helped man. What special types of manufacturing began in certain locations. Why textile manufacturing is so important in Massachusetts and Rhode Island. Upon what other section of the United States these factories depend for raw cotton. Why the manufacturing of shoes is important in Massachusetts. From what other section some of the hides and skins for the leather come. Why silk manufacturing is located chiefly in New Jersey and Pennsylvania. Why the Pittsburgh district has become famous for its iron and steel goods. Why metal products are manufactured in Connecticut and jewelry in Rhode Island. How the people in the city depend upon the people in other sections of these states, and also on people in other regions of the United States. Why the types of farming are changing. Why dairying and the raising of fruits and vegetables are important. Why fishing has been, and still is, an important industry.

As this group of states is a decidedly urban group, special attention should be given to the cities. There are three groups of cities to be noted: the coastal group from Boston to Philadelphia, the group from Albany to Buffalo on the inland route, and the group in western Pennsylvania. Each of these groups has characteristics peculiar to itself, as a result of the types of work carried on. Outstanding cities in each group should be studied so that the individuality of

the city stands out; then comparisons should be made so that the children see that each group of cities has certain characteristics in common.

Summary and Application Exercises: The following instructions and questions were presented to the class:

1. List facts to explain each of the three groups of cities.
2. How are the activities carried on in these cities related to activities in other parts of the United States?
3. A ranchman in the West reads in the paper that the price of leather in Boston has dropped. Why should he be concerned?
4. All the coal miners in Pennsylvania and West Virginia go on a strike. In a few months many of the textile mills and other factories in New England close; then the price of raw cotton drops. What connection is there between these happenings?
5. Explain the reasons for the less dense population in some sections.
6. List all the ways in which the ocean is connected with work or play in these states.
7. Explain each one of the following items: (a) stone fences in New England; (b) long rambling houses in New England, with sheds connecting the house and barn; (c) oats as the chief grain crop in New England and much land used for hay and pasture; (d) raising of corn for silage; (e) raising of tobacco in the Connecticut Valley and in eastern Pennsylvania; (f) the cranberry industry; (g) lumbering and cutting timber for wood pulp; (h) the importance of textile manufacturing; and other human activities.
8. Plan a summer vacation trip, and explain why you selected the route and the place where the vacation is to be spent. Do the same for a winter vacation.
9. Be able to identify the city plan or map of Boston, Buffalo, Philadelphia, and Pittsburgh. Be able to tell why you identify each map as you do.
10. Be able to pick out the pictures that are characteristic of this section from a set containing pictures from various parts of the United States.

IV. THE SIXTH GRADE

1. Level of Difficulty and Types of Relationship

In the sixth grade it is proposed that regions of the world be introduced in terms of major understandings of Level Three. By this time the pupils should have gained the ability to recognize and to think in terms of more complex relationships. They should be able to use a variety of geographic tools with considerable facility. They should be able to apply to new situations the concepts, ideas, and relationships already gained.

At this level the political unit seems the logical and psychological one to use as the organizing center. This work is somewhat more

difficult than that with human-use regions, as it involves the weaving together of all the human-use regions within a political region to reach a major understanding of the country. However, the way has been prepared for this in the latter part of the fifth-grade work where the climactic understanding of the individuality of the country as a whole was gained from understandings of the human-use areas that comprise it.

Moreover, as has already been noted in the discussion of Level Three, several new elements are introduced and stressed at this stage. These elements, mainly more abstract human elements, mark a definite increase in the difficulty of the relationships involved. One of the more abstract human items introduced and stressed in the sixth grade is the relative importance of a specific country among other countries. Another has to do with the specific characteristics of the people making the adjustments, characteristics that tend to distinguish them from other peoples and that play a vital part in the particular uses they have made of the natural resources at hand. Examples are items such as the scientific and coöperative attitude of the Danish people that has played so large a part in their successful development of a unique type of dairy farming, the thrift and artistic tendencies of the French people, the ancestor-worshipping set of mind of the Chinese, and the like. With the introduction of such relations comes the increased realization that the relative importance of a country among other nations depends in part upon the intelligence and industry of the people, themselves; that is, it depends upon how the people take advantage of the opportunities offered by the natural environment.

A third new element of a somewhat abstract nature introduced at this level is 'standard of living.'

It is proposed that the 'filling in' of the initial world concept be continued by gaining a knowledge of the adjustments man is making to his environment in Europe and in Asia, and possibly in other continents. As pointed out elsewhere, the child, through the study of such countries as are introduced, comes to think of the world in terms of its 'country' pattern as well as in terms of its latitude and human-use patterns. The units are selected from these continents for three reasons: (1) they seem in the light of careful analysis to serve best to develop the types of relationships comprehensible at this level, (2) from the standpoint of functional value Europe is the continent of next importance after the United States and Canada to American

citizens, and (3) current practice seems to tend toward this order and emphasis, as has been shown in tabular summaries in Chapter XIV.

2. Major Understandings to Be Gained

The major understandings to be gained concerning each country studied are:

1. An understanding of how the major work activities, their distribution in various human-use regions, the distribution of population, the density of population, the relative rank of the country, the standard of living, and other characteristic human items in a specific country are related to the natural environmental conditions characteristic of that country.
2. A concept of the world as made up of countries, each characterized by outstanding adjustments to natural environment.

The major abilities, habits, and attitudes to be attained are discussed in Chapter XVI.

3. Sixth-Grade Programs

The major points to be kept in mind in planning a program for the sixth grade are: (1) that all units be concerned with developing understandings of the environmental adjustments that give distinctive character and standing to the various countries studied; (2) that emphasis be varied with the importance of the region to the average citizen; (3) that enough time be spent on each country treated for a thorough understanding, on this level, of its geographic individuality; (4) that the order of presentation be in accord with the relative difficulty of the major understandings involved. Attention is called to the fact that these points are based on the general curricular principles stated in Chapter XIV.

In so far as analysis and experimentation have thrown light on the matter, children may readily understand those countries whose civilizations, standards of living, and national traits are like our own. Such countries are found chiefly in western Europe. Because these countries play a more important part in our lives than do other countries, it is desirable to introduce them early and with relatively great emphasis. Similarly, since knowledge of the countries of the Far East seems to be of next importance to most citizens of the United States, it would seem that the Far East should be next in order of emphasis and presentation. The countries of eastern Europe and western Asia par-

take of the nature partly of the Occident and partly of the Orient; therefore, they can be more readily understood after both the Occidental and Oriental countries have been studied, and should receive, with the exception of Russia, little emphasis. There seems to be less latitude as to relative emphasis and order of presentation of these three great groups of countries than there was in the arrangement of units in suggested programs at earlier levels. However, much latitude remains in the order of presentation within the major divisions.

In offering the following programs for experimental use, another consideration enters. The fact that some children leave the elementary grades without going on to junior high school, taken with the belief that a sharp break should be made in all types of training at the end of the sixth grade, has led to the proposal that all countries of the world be treated in the sixth grade. The illustrative unit on Germany indicates roughly the amount and types of experiences involved in getting an understanding of one major country at this level of the pupil's geographical development. Obviously it is impossible to give in one year, to children of the sixth grade, understandings of this type, even though they are far from exhaustive, for all countries of the world. Of course, all countries may be introduced and a few facts pointed out about each, but time is required for the development of interpretive ideas. To fail to develop such ideas is to fail to teach geography and to substitute instead memorization of facts.

After due consideration of all proposals, it seems that the following alternative possibilities should each be represented in the programs proposed. It is to be noted that the first does not provide for a completed world view; both the second and third do, however.

1. Whether or not a child is to leave school at the end of the intermediate grades, the sixth-grade work may be devoted to the countries of Eurasia and to the development of those attitudes and abilities that the gaining of interpretive ideas concerning them engender. Among the attainments thus developed are habits of thought and ability to use tools that will equip these children with greater power than they would get from a less thorough-going treatment of many regions.

2. Types from the remaining countries of the world, including one or two representatives each of the western Europe group, the eastern Asia group, the intermediate group, Latin America, Africa, and Australia may be selected. Again, all regions should be treated in accordance with third-level ideas. If the child goes on to junior-high-school

work in the subject, he will have the opportunity, in connection with the geography of centers and areas into which expansion has been made, to do fourth-level thinking.

3. Most of the time in the sixth grade may be devoted to the countries of Europe and Asia. In a few closing units may be included some outstanding parts of other lands in Latin America, Africa, and Australia, with no attempt to do more than introduce major problems.

Since experimentation with these three possible sixth-grade treatments has not gone far enough to prove the superiority of any one of them this Committee is likewise in no position to recommend any one of them as best. The three suggestive programs that follow illustrate, accordingly, these three points of view and also variations of order within the Europe-Asia group. Of course, numerous other changes in order might be made within the limits of the controlling order of the major groups. As in earlier grades it is of utmost importance, if work throughout the year be well graded, that the order of presentation be decided upon before specific units are organized, because in effective work a unit organized to occupy the sixth place would not be suited for presentation as the second or the eighth place in the sequence of units.

THREE POSSIBLE SIXTH-GRADE PROGRAMS¹

A	B	C
British Isles	A Scandinavian country	Italy and Iberian
France	A West Mediterranean	Countries
Germany	Country	France and Belgium
Small North Sea	France	Germany and the
Countries	Germany	Netherlands
Scandinavia and the	Britain	Baltic Countries
Baltic Sea Countries	A Central European	Scandinavia
Italy and Iberia	Country	Britain
Countries of Central	A Far East Country	Central European
Europe	A Near East Country	Countries
China	Russia	China and Japan
Japan	Argentina	India
India	Brazil	Russia
Other Countries of Asia	Mexico	The Near East
The Balkans	French Africa	Outstanding Eurasian
Union of Soviet Socialist	South Africa	Adjustments
Republics	Australia	Outstanding Latin
Outstanding Adjustments		American Problems
in Eurasia		Mexico
		Outstanding African
		Problems

¹See Note 3, page 245.—*Editor*.

It is to be noted that no one of the programs presented takes care, in any way, of the entirely different type of geographical training afforded in the junior high school. Need for fourth- and fifth-level thinking would remain, regardless of which one of the proposed sixth-grade types of programs is followed.

4. An Illustrative Sixth-Grade Unit

In this illustrative unit, for which we are indebted to Edna Eisen, of Milwaukee, Wisconsin, the reactions and activities of a group of sixth-grade pupils are reported, as well as the plan of the unit.

Germany: A Geographic Treatment of a Political Region

Major Understanding: how the dense population of all of Germany, the concentration of extremely dense population in a broad belt in which there are many large cities, the importance of agriculture, as well as the high rank of manufacturing and commerce, the comparative newness of Germany as an important industrial and commercial nation of the world, the significance of scientific research, the wise use of resources, and directed management and coöperation and other human items distinctly characteristic of Germany are related to a natural environment in which outstanding items are the rugged surface of the dissected plateau region of the south and west and the originally infertile sandy soils and marshlands of the northern plain, offset in part by fertility of some areas, position in high-middle northern latitudes, a climate of exceptional uniformity (marked by short, cool summers and mild winters in the northwest, by a little greater variation in seasons to the east, by mild winters and warm summers in some of the valleys of the plateau, and by moderate rainfall fairly well distributed and coming chiefly during the summer months), abundance and distribution of coal resources, of deposits of potash and salt, of iron, zinc, lead and copper ores, and of clay, abundant forests, frontage on the Baltic and North Seas rather than on the open ocean, and river highways and easy natural land routes for travel between various parts of the country and between Germany and other lands.

With this goal determined, the writer (Miss Eisen) selected and presented the following materials to the class and directed the activities of the pupils toward the mastery of this major understanding, with the idea continually in mind of having the pupils see *how* the various items in the cultural complex mentioned are related to items in the natural complex. Acquisition of facts, in themselves, was not kept to the front.

Initial Exercises: Note Germany on the physical-political map, and on the population map. In what ways do these maps suggest that Germany is a well-developed country? (Dense population, many large cities, many railroads.) Let us see what our maps tell us that might help to explain why

Germany has become one of the leading nations of the world. Does its surface suggest that most of the country is good for farming? Much of the northern plain consists of sandy areas and marshlands. What does its latitude suggest as to the kinds of crops that might be grown with the temperatures and length of growing season? What do the rainfall maps add to your ideas about the kinds of crops that might be grown? Do these facts suggest that Germany would have developed much agriculturally? What do you notice about the coast line of Germany? Should you expect ocean trade to develop as readily as in countries with a long Atlantic coast? Why or why not? What kind of work do you think, then, has contributed much to the development of the country? Does this table, which shows the percent of people engaged in various kinds of work, agree with what you expected? Why or why not?

Agriculture	31 percent
Mining and quarrying	3 percent
Manufactures	38 percent
Trade	12 percent
Transportation	5 percent
Others	11 percent

("I expected manufacturing to be high, but much higher than farming, and it isn't.") Then one of our problems will be to find out how so many of the people of Germany make a living by agriculture in spite of what appears to be unfavorable natural conditions. What fact about Germany does this graph of growth of urban and rural population in United States, Britain, France, and Germany show you about Germany? What does this fact suggest that probably is true also of the industrial development of Germany? Since this is the case, do you not want to discover why Germany was late and what factors have helped to make Germany a great manufacturing and commercial nation now?

Means of Assimilation: In the assimilation periods the teacher provides those materials that the pupils use to help solve the problems raised and thereby to gain mastery of the major understanding of the unit. There are many geographic relationships that the pupils must understand in order to obtain mastery of the goal idea. To understand these geographic relationships, the pupils must have the necessary concepts of both human and natural items. Then the teacher's problems are: (1) to select all facts needed for the mastery of the goal idea, and (2) to be sure that the pupils have the apperceptive background necessary to use the facts in thinking geographically, and (3) to select appropriate media for learning.

The class meetings of the three groups during this assimilation period varied with the needs and questions of individuals and of the groups. In the first period the pupils began to list facts that help to explain their agricultural problem. The farming pictures of the set used earlier with Group I were studied to find from them uses of land and suggested reasons for these uses. This was followed by a study of the European crop and stock maps

in one of the texts in order to note distributions and relative amounts¹ of land used. These exercises of the reconnaissance survey type raised such questions as, "Why are sugar beets and wheat not more widely distributed?" "Why are there so few sheep?" The pupils then read the small section on farming in their own texts and the discussion in at least one of the other texts available to find answers to their questions and other facts to complete their lists. The pupils worked at varying rates of speed; to bring them together again, a composite list of facts was made with contributions from the class. The final lists for the groups did not differ much. The pupils in giving facts for the list had to explain how their contribution helped in answering their problem, showing on maps, where possible, evidence for their statements. Examples of the facts listed are: (1) use of the poorer soils for rye, oats, and potatoes, which do not require very fertile soil; (2) use of better soils for sugar-beets and wheat; (3) use of fertilizers for which Germany has much potash; (4) the draining of wet lands; (5) care in the selection of crops best suited for the soil; (6) 'farming' of forests (pictures of well-cared-for forests), conservation of soil, erosion explained.

The pupils were now ready to search for facts that would help to explain how Germany became a great manufacturing nation. The population map was referred to again, and the belt of dense population in which there are many cities was suggested by the pupils as the section in which most of the manufacturing is probably done. The pupils consulted a map of coal distribution and discovered that coal fields are located near the Rhine in Westphalia, where there is an area of very dense population, in Saxony near the Elbe, another densely populated section, and in Silesia near the Oder, a third thickly settled region. This suggested that available coal supply probably is an important item in the explanation. There must be other factors as well. The pupils were ready to find out from their text and from other sources additional facts that help to explain the importance of manufacturing and its distribution.

While the pupils were working, the teacher was called upon by individuals to explain things that were not clear. If it seemed to be a matter that was troubling a number of pupils, the study was interrupted to give the explanation. For example, in one group there were many who were disturbed because they could not understand how nitrate could be formed from the air. They were given a simple explanation that satisfied them and that helped them to see the relationship between the manufacture of nitrate and deposits of coal, large amounts of which are needed for power.

Lists were made of the facts the pupils found. In the case of each item listed, the natural and human factors helping to explain the nature of the

¹ Several pupils later in their study of the texts discovered in one text a question requiring a comparison of such maps, one a world map, the other a map of Europe, neither one carrying a legend. The pupils came up to check with the mounted maps, because they said the maps in the book didn't tell anything.

activity and its developments in certain localities were given. One example is sufficient to show the *type* of material gathered. The pupils in giving items for the lists always showed how each item applies.

THE RUHR MANUFACTURING DISTRICT

<i>Signs of Manufacturing</i>	<i>Factors in the Explanation</i>	
	<i>Human</i>	<i>Natural</i>
1. Smelters or blast furnaces and fabricating ¹ plants	1. Coal mines of the area	1. Rich deposits of coking coal in the district
2. Dye and other chemical works	2. Work of scientists in finding a way to remove phosphorous from ores	2. Deposits of iron ore (small)
3. Textile mills	3. Work of scientists in discovering a process for making use of coal tar for dyes and other products	3. Easy access to Lorraine iron fields and to other lands producing iron ore
	4. Railroad connections	4. Rhine waterway, which is navigable for barges almost all year ²
	5. Use of the Rhine ³ and of canals	5. Situation making railway connection easy
	6. Government help	
	7. Schools for training workers	
	8. Development of commerce—demand in other countries for products and needs of industries	
	9. Former ownership of Lorraine	

Of course each manufacturing district or industry brought out some of the other facts in the explanation of the problem, such as, water power resources in Bavaria, early start as trading markets of cities like Leipzig,⁴ central

¹ New term introduced by use of pictures—blast furnaces along the Rhine and Krupp works at Essen.

² Maps showing upstream and downstream traffic on the Rhine and graphs showing commodities transported were presented to the group at this time. From the graphs the pupils saw not only the volume of the traffic but also the bulky character of the products transported. (Before the traffic was considered the pupils were tested on the meaning of the terms 'upstream' and 'downstream'.)

³ The difference between the St. Lawrence and the Rhine in this respect was brought out by one of the pupils.

⁴ When the relationship between the growth of Leipzig as a trading center and its situation was brought out, one of the boys remarked, "This reminds me of something that I read some time ago. It was that the European tramps were holding a convention in Leipzig. I think Leipzig's situation helps to make it a good place for such a gathering."

position in the railroad net for Berlin, and others. The pupils assembled a great many facts in four class periods. It is not expected nor it is desired that this great mass of material be stored in the pupils' minds, but it is hoped that they gain through it the major understanding and make progress in thinking geographically.

Testing for the Major Understanding: The writer has been experimenting with a type of true-false test that will test whether the pupils know the population and work patterns of a country and how they are related to the natural environment; or, in other words, whether the pupils have gained the understanding of the geographic personality of the country. A test of this type on Germany, in which there are fifty statements, some of which are true of Germany and others which are not true of Germany, was constructed. The following list of sample statements will serve to indicate the general type:

1. It is, on the whole, a densely peopled country.
2. The population is very evenly distributed.
3. A very small part (less than 2 percent) of the vast area of the country is used agriculturally.
4. Rye and potatoes are widely distributed on the thin soils of the highlands and on the sandy lands of the plain.
5. The long growing season with the many hot summer days of this middle-latitude country helps to explain the wide distribution of corn.
6. The chief manufacturing districts are inland areas where good river and lowland routes help to connect them with the sea and with other parts of the country.
7. The rich deposits of coal and of iron ore near Hamburg help to explain the importance of steel manufacturing there.
8. The lack of good coal resources helps to explain the fact that manufacturing is of less importance than farming.

The writer is well aware of certain shortcomings in this test: first, a few of the statements do not show relationships; second, one or two partially true statements¹ are included; and third, it may be testing the product of learning more than true learning itself. It is given here merely as part of a testing experiment.

The following question demanding application was given to these same groups.

"Germany leads the world in the consumption of fertilizers. It has been estimated that approximately one-fourth of the total world consumption of chemical plant food is in Germany, a country slightly larger than the combined areas of the states of New York, Pennsylvania, Ohio and Indiana." This statement, taken from a recent

¹ An example of this type of statement is the following: "The Rhine River is a much used waterway, used chiefly for carrying commodities of high value but small size and little bulk."

Commerce Report, probably does not surprise you after your study of Germany. List all the facts you can that help to explain the above statement about Germany.

There are many other ways of testing for geographic understandings. An example of a type of question that tests relational understandings quite effectively and that was used with these classes follows:

The wide distribution of rye in Germany suggests that:

1. Growing seasons in most of the country are
 - (a) More than eight months.
 - (b) Less than five months.
 - (c) From five to eight months.
2. The country lies in latitude of about
 - (a) 30° N. to 40° N.
 - (b) 10° S. to 20° S.
 - (c) 45° N. to 55° N.

Various exercises that the pupils look upon as games make good check exercises. These classes played one of their favorites, "I'm thinking of," a game in which one pupil gives some outstanding facts about a city or districts and the pupil called upon names and locates the place described and then continues the game. This same idea the writer often uses in a matching-test.

Organization of Geographic Data: Although the pupils have been led to organize the data they gathered in answering the problems raised in the initial exercises, the writer believes that a final unit organization without notes should be prepared by the pupils. Pupils cannot be expected to write such organizations without guidance. A few examples of relational statements taken from various papers of the high group are given to show what pupils can do after they have some practice.

1. The use of scientific farming in much of Germany—the use of otherwise waste lands—sandy soil in northern part; highlands in southern part; marshy lands in and near the Spree Forest and about Berlin.
2. Manufacture of iron and steel products in the Ruhr—easy access to deposits of iron ore in Lorraine; river highway; deposits of high-grade coking coal.
3. Prosperous chemical industry—deposits of potash and salt; deposits of bituminous and lignite coal; poor soils. (Many skilled scientists at work and schools to train workers in Germany; demand in other countries as well as in Germany.)

The pupils ought to have opportunity to give oral summaries as well as written ones. In the low group the pupils used their lists of outstanding facts and showed how the items of the natural environment help to explain the human facts in their lists. In the other groups the pupils used their

relationships to help to explain the foreign trade of Germany, which has been graphed by one of the pupils.

It is felt that such a presentation and procedure have helped the pupils to realize that, although their country developed later than the other great nations of Europe, the people of Germany in adjusting themselves to their natural environment have helped to make their country (1) a great industrial nation in which chemical, iron and steel, and textile manufacturing are outstanding; (2) a country with a large foreign trade based on manufacturing and its needs; and (3) a land where, in spite of many unfavorable natural conditions, farming is important.

In gaining this understanding the pupils tended to develop a sympathetic attitude towards the people and, likewise, a feeling of respect for a people who have been so skillful and so conserving as have the people of Germany.

The three notes that follow reached the editor too late for insertion on the pages to which they refer without breaking up the pagination of the Yearbook; the importance of the points under discussion justifies their insertion here at the end of the chapter.—*G. M. W.*

Note 1 (referring to page 228). *Alternative Allotment of Material:* For schools that wish to complete a world cycle in the elementary division; that is, by the end of the sixth year, it seems desirable that Latin America might be included in the fifth year. By so doing, the work on Europe, Asia, and the two other continents of the Southern Hemisphere could be more satisfactorily covered in the sixth year. These alternative programs for the fifth and sixth year need not invalidate in any way the theory of 'levels of difficulty' set up by the Committee.—*E. E. Lackey.*

Note 2 (referring to page 231). For schools that wish to complete a world cycle in the elementary division, another alternative program should be set up.—*E. E. Lackey.*

Note 3 (referring to page 238). For schools that wish to complete a world cycle in the elementary division, Latin America should be transferred from Programs B and C to one of the alternative programs for the fifth year.—*E. E. Lackey.*

CHAPTER XVI

A PROVISIONAL FORMULATION OF ATTAINMENTS IN GEOGRAPHY FOR THE ELEMENTARY SCHOOL

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I. GENERAL CONSIDERATIONS IN THE FORMULATION OF THE ATTAINMENTS

The purpose of this section is to formulate specific attainments in geography for the elementary school. Such objectives as the oft-quoted "appreciation of the interdependence of nations" and "development of sympathy for, and understanding of, peoples in distant lands" are rather far-reaching and relatively intangible. They have been criticized by educators as being equally applicable to other subjects in the curriculum. The significant contributions that geography makes to such objectives will not be appreciated fully until the immediate outcomes are so stated that they point the way step by step toward the attainment of major goals. An endeavor is made in this chapter to set up major geographic understandings and abilities so that the particular contributions are differentiated for each level.

In formulating the attainments several fundamental considerations were deemed necessary: (1) analysis of subject matter in the light of the laws and principles of the modern science of geography; (2) recognition of the intellectual power of children of different ages; (3) investigation of the relative difficulty of acquiring the various geographic understandings and abilities involved; and (4) evidences in objective studies and in records of effective teaching that many of these attainments are reached by the elementary-school child.

Effort has been made to place the major understandings in such order that progressive development is evident. A similar sequence has been sought in the use of geographic tools. It is believed that the rate of progress prescribed by these outcomes is feasible, but experimentation has not gone far enough to be conclusive on all points. Further investigation is necessary to test the validity of these out-

comes and the allocation of each. Such a testing program should include the following steps: (1) building a course of study to guide progress toward these goals, (2) experimental teaching to ascertain effective methods of presenting the units and providing suitable pupil activities for each unit, and (3) testing to measure the results obtained. The findings of such a program will show what modifications are necessary in this provisional set-up of outcomes. The attainments formulated in this section are only tentative. They are presented as a working hypothesis to be subjected to rigorous testing.

II. THE FOURTH GRADE

An initial world-understanding is believed possible of attainment by the end of the fourth grade. This understanding of the 'world framework,' or, as some writers name it, 'the world as a whole,' is that of simple, direct relations of certain human activities to contrasted types of natural environment at different distances from the equator. Another exposition of this initial world-understanding more strikingly shows its simplicity and its basic importance. Man fits his food, clothing, shelter, his out-of-door work and play to the conditions of nature in the region where he lives, paying particular attention to seasons. Man makes definite adjustments to the time of sunrise and sunset, to the position of the sun in the sky. Seasons are the results of sun 'behavior' (the apparent path of the sun through the sky); sun behavior varies with only one thing, distance from the equator. This is the simplest world concept, since it deals with only one variable. It seems, therefore, the logical one for the fourth grade from the standpoint of geography, and the psychological one from the standpoint of the child. Some ten or twelve unit understandings of simple type areas will serve to build up this world-understanding.

1. Unit Understandings¹ That Support the Initial World-Understanding

A. Peoples in Hot, Wet Lands Near the Equator

Peoples living on lowlands near the equator need very few clothes in order to be comfortable, for hot, wet summer weather prevails all year long. The most important part of the house is the roof, for shelter is needed against heavy rains. Under these conditions of continuous summer with

¹ An illustration of a type of major understanding may be found in Chapter XV in the discussion of Level One.

plentiful rain, forests grow luxuriantly. Travel through these dense forests is difficult. Many rivers provide the easiest highways. To use them canoes, dug-outs, and rafts are constructed. The chief food supply is raised in small clearings. Such crops as bananas and manioc thrive in continuous heat and moisture. By hunting and fishing people supplement the fruit and vegetable diet. Peoples cut off from world trade seek the necessities of life in the immediate environment, using things nature has provided.

B. Peoples in Hot, Dry Lands Near the Tropics

Herders in deserts and on desert margins depend upon very scanty herbage and widely scattered water supplies for the maintenance of their camels, sheep, and goats. In lands of scanty rainfall and high temperatures, there is little vegetation; so the herders are continuously on the move, seeking forage for their animals. Tents are the most convenient homes for frequent moving. Loose-flowing cotton and woolen garments protect their wearers from the burning sun and the sand- and dust-bearing winds. By far the greater number of desert people live in oases and carry on irrigation farming. Where a supply of fresh water is available near a level stretch of land with fertile soil, they raise dates, grain, beans, and other vegetables. Low, thick-walled, flat-roofed houses of sun-dried clay are their homes. Trade between the oasis dweller and the wandering herders is common.

C. Farmers in Lands of Marked Seasonal Contrasts, between the Tropics and the Polar Circles

1. Not far beyond the tropics, in lands of mild winters with rain and hot dry summers, there is pasturage available for flocks of sheep and goats in the winter. But in the summer, when the lowlands burn brown, the flocks are driven into the hills and mountains. Higher up it is cooler and more rain falls; the pastures are green. In the lower lands winter is so mild that evergreens, such as oranges and olives, grow well. Wheat is planted in the fall and is harvested in early summer. In the dry summer almost all crops need irrigation. Farmers are busy all the year but do very different work according to the season of rain or the season of drought.

2. Midway between the tropics and the polar circles, on fertile plains with hot summers and cold winters, the farmers are busy in spring, summer, and fall raising crops to be stored away for food for themselves and their animals during the cold, snowy winter. There is little work to be done outdoors in the winter time. Well-built, thick-walled houses are needed and much fuel is burned for heat in the winter time. Two wardrobes are necessary: a light-weight one for the hot weather when the noonday sun is high in the sky and the days are long, and a heavier woolen one for comfort in the freezing weather when the noonday sun is low in the sky and the days are short.

D. Mountain People

1. Near the equator. Shepherds in the high mountains have little change in their work throughout the year, for the noonday sun is always high in

the sky and the days are about the same length the year around. Woolen clothes and heavy boots are needed in this high land where it is always cool. Steep slopes, thin soils, and cool temperatures make herding more important than farming. In the narrow mountain valleys there is little room for farms. The flocks graze on the high pastures all the year round.

2. Farther from the equator. Herders go with their cattle and sheep and goats into the high pastures in the summer when the sun is high in the sky and has melted off the snows except from the higher peaks. In the fall the herders leave the high pastures before the snow comes and return to their homes far down in the valleys. Through the long, cold, snowy winter, when the sun is low in the sky and the days are short, the animals are kept in the barns and fed on grain and hay that were raised in the valleys in the summer. The beauties of mountain peaks, waterfalls, glaciers, snowcaps, forested slopes, and alpine grassland and flowers attract many summer tourists. Curving roads, tunnels, and bridges indicate some of the difficulties man had to face when building railroads and highways in the mountains.

E. Delta Peoples

In order to use the deep, fertile soils deposited by the river at its mouth, people build dikes to keep out the river water and the seawater. Behind the dikes, ditches and canals are dug to carry off the surplus rainwater. On land as close to sea level as is delta land there is so little slope that pumps are often used to keep the drainage waters moving. The canals are used as highways and many persons make their living operating freight boats on them.

1. Near the equator. On delta lands near the equator, rice is a favorite crop. Rice needs water standing on the field part of the time. It is easy to flood fields on deltas.

2. Farther from the equator. Farther from the equator, where the summer is not hot enough or long enough for rice growing, dairying becomes an important use for the wet lands. There is excellent pasture and the canals serve as 'water fences.' Freight is carried on the canals until they freeze in the winter. Even then some freight goes over them in sleds.

F. Fishermen Far from the Equator

Along deeply indented, rocky coasts that are washed by cool waters abounding in fish many persons turn to the sea to make a living. Farming is difficult upon rough land with poor soil, and particularly so on poor lands that lie far from the equator where the summer is cool and short.

G. Trappers, Hunters, and Reindeer-Herders within the Polar Circle

On plains far from the equator, where the summer is too short and too cool to permit the growing of crops, man depends upon animals for the necessities of life. Moss and grass and lichens grow in the short, cool summer and provide feed for the reindeer and other land animals. In the sea many animals live. Man lives near the coast in order to obtain food, clothing, and fuel from the sea animals as well as from the land animals. If he cannot find

drift wood, he builds his winter house of sod or snow and ice. In the summer, when the days lengthen until the sun does not set for a whole month or more, all the snow melts away on the lowlands and man moves into a skin tent. Fur clothes are comfortable all year, but in the summer fewer layers are necessary. Winter is the time for trapping, for then the fur is at its best. This type of work can be carried on even though it is dark most of the time during mid-winter.

H. Explorers Near the Poles

Near the poles it is continuous winter. The snow and ice never melt entirely away, so that there are no plants, and there is nothing for man or beast to live upon. No one lives near the poles. Only a few daring explorers have gone there. They must carry with them all the food for themselves and their dogs. Explorers select the time for their expeditions to fit the period of continuous daylight.

2. Abilities to Be Developed through Gaining the Unit Understandings Listed

A. Ability to Identify Given Human Activities with a Region Having Specified Natural Conditions

These five categories will serve to direct the selection of specific relations:

1. Selection of materials and style of house so as to be comfortable in a certain climate and to make use of materials provided by nature.
2. Selection of material and style of clothing so as to be comfortable in a certain climate.
3. Selection and care of food to fit the natural conditions of the region.
4. Ways of making a living in which things provided by nature are utilized.
5. Modes of travel related to conditions of the land surface and presence of waterways.

B. Ability to Identify Regional Groups Studied with Specific Locations

Example: A land where people wear few clothes, live in airy, reed and leaf houses, with steep roofs, and grow bananas and manioc all the year around, since it is always hot and there is abundant rain. Check those regions the above describes:

Holland
The Congo
Switzerland

Sahara
The Amazon
Arabia

C. Ability to Recognize the Regions Studied on a Simple Map and Globe

D. Ability to Apply 'Sun-Behavior' Understandings When Describing Simple Seasonal Activities

1. On lowlands near the equator there is summer weather all year. The noonday sun is always very high in the sky.

2. Summers shorten with distance north or south of the equator and winters lengthen.
3. Near the poles winter weather continues the year around.
4. Days and nights are always equal at the equator.
5. Summer days lengthen and winter days shorten as distance from the equator increases.
6. North of the Tropic of Cancer the noon sun is always in the southern sky.
7. South of the Tropic of Capricorn the noon sun is always in the northern sky.
8. Between the tropics the noon sun is always high in the sky, part of the year in the northern sky, part of the year in the southern sky.
9. Within the Arctic Circle and the Antarctic Circle the sun does not rise above the horizon for one or more days each winter and for an equal time in the summer it never sets.
10. Winter months north of the equator are summer months south of the equator. When it is summer north of the equator, it is winter south of the equator.
11. It is always cooler in mountains than in lowlands at the same distance from the equator.

E. Ability to Use Simple Maps¹

1. Ability to read symbols of natural and cultural features on maps.
2. Ability to read direction.
3. Ability to read into a map such relationships as (a) It would be easy to row a boat from A to B, for it is in that direction that the river is flowing. (b) A is in the mountains, B on the plains. It would be cooler to live at A than at B in the summer time; but B would be more comfortable in the winter time. (c) There is more land level enough to plow near B than near A, because A is in the mountains and B is on the plains. (d) The river D is more likely to have falls in it than the river E, for river D is in the mountains while river E is in the plains.
4. Ability to compare pictures and maps and to read the symbol on the map that represents a particular item in the picture.

F. Ability to Use Globe or Hemisphere Maps

1. Ability to recognize the same symbols on the globe as already were learned on maps of small areas.
2. Ability to recognize (a) sun-behavior lines, (b) direction lines, (c) continents by name, and (d) oceans and larger seas by name.
3. Ability to read directions by means of the north-south and east-west lines.

¹ A 'simple' map is defined as one containing few, if any, contours—the surface features being shown by shading or colors—few parallels and meridians, no political boundaries. These are not reference maps, but maps prepared for teaching purposes.

4. Ability to read comparative distances; to locate any place with regard to the equator, tropics, circles, and poles—not in terms of latitude or miles, but thus: A is near the North Pole; B is near the equator; C is nearer the equator than is D; E is half way between the equator and the North Pole; F is a little south of the Tropic of Capricorn.

5. Ability to read into the globe or hemisphere map seasonal conditions associated with distance from the equator.

6. Ability to associate locational facts with human activities.

G. Ability to Use Pictures in Landscape Reading

1. Ability to recognize natural items in pictures; *e.g.*, Picture A was taken in the mountains, B on a plain. Picture C is some distance from the equator, for it is very cold there, at least part of the year. The signs are a house with a chimney, much snow on the ground, trees bare of leaves.

2. Ability to recognize cultural items in pictures, as, houses, clothing, crops, means of transportation.

3. Ability to read into pictures probable relationships.

Example: Picture of persons in loosely flowing clothes taking down tents and packing possessions on camels. Inference: this is a picture of nomadic grazers. It is a dry region, there is not enough pasturage in one place for long. Herds must be moved frequently. Tents are the most convenient kind of houses for this type of life.

4. Ability to identify landscapes of any regions studied with the specific name of the region.

Example: In which one of the following places was the picture just described taken: Holland, the Congo, Arabia, Switzerland, Italy, on the banks of the Nile?

H. Ability to Use Correctly Certain Technical Terms

Among these are 'equator,' 'Tropic of Cancer,' 'Tropic of Capricorn,' 'Arctic Circle,' 'Antarctic Circle,' 'North Pole,' 'South Pole,' 'delta,' 'irrigation,' 'desert,' 'continent,' 'hemisphere,' 'glacier,' 'falls,' 'mountain range,' 'mountain peak,' 'mountain pass.'

3. Habits and Attitudes to Be Developed through Gaining the Understandings Listed

1. The habit, or set, of seeking in pictures and in actual landscapes for facts about food, clothing, shelter, kinds of work, and methods of travel.

2. The habit of seeking in pictures and in actual landscapes for conditions of nature that probably help to explain the human activities shown.

3. The habit of checking such relationships discerned in a picture by reference to textual material and other sources of information.

4. The habit of locating on a map each region studied.

5. The habit of using maps as guides when traveling, either actually or in imagination.

6. The habit, when reading material about a region, of looking for facts about food, clothing, shelter, kinds of work, and means of travel and for reasons why man has chosen these particular means of fitting his ways of living to the kind of region where his home is.

7. The habit of checking picture information, map information, textual information, one against the other.

8. Realization of the importance of pictures and actual landscapes as a source of information about people in different regions.

9. Interest in reading landscapes when traveling, in reading pictures in geographic magazines and travel books.

10. Appreciation of maps and globes as necessary tools for finding the location of places.

11. Sympathy and understanding for peoples who are out of contact with the rest of the world or whose environments are not so rich as those in the greater part of our country.

12. Readiness to give primitive peoples credit for what they have been able to accomplish in overcoming handicaps and in taking advantage of the resources that nature provided in their home region.

III. THE FIFTH GRADE

Having gained the initial world-understanding of relations of simple human activities to simple types of natural environment at varying distances from the equator, the fifth-grade child is ready to proceed toward a world-understanding of a much higher level and to use more complicated tools. Into the world framework the child fits region after region until he has covered the major countries of the world and has built up a second world-understanding of far greater complexity than the initial one, yet one through which the threads of the initial understanding are very definitely woven, adding strength to the new concept. The first world-understanding results from a study of *types* of area selected from many parts of the world. The second understanding will evolve out of studies in *distribution*, country by country. The distribution study of each country gradually builds up the new world-understanding, but not until all the major countries of the world have been analyzed does the second world-understanding crystallize.

By the end of the fifth grade the United States will have been fitted into the world pattern. The United States is the logical country with which to begin the distribution studies for several reasons: (1) dot maps are available, showing accurate distributions of the major crops and kinds of livestock in the United States; (2) the American child has more contacts with various sections of the United States than with any

other country; (3) it is easier to get detailed, first-hand information about the various sections of the United States than it is to obtain such material about foreign lands; and (4) the United States is a large country of strikingly contrasted regions, all under the same government, with the same language, essentially the same customs, the same historical background; in other words, a country of great geographic contrasts but in the same civilization. Thus the child is introduced to distribution studies that reflect very clearly different adjustments in different natural environments without the additional complication of reactions under different political situations and different civilizations.

The fifth-grade child is not ready to look at a complex country as a whole. He cannot see generalities readily; at this stage he needs very specific, particularized experiences. These are well furnished by the study of human-use regions, one at a time.

A 'human-use region' is defined as an area throughout which the major uses made of the resources of the natural environment are essentially the same. For example, the Corn Belt is a human-use region dominated by corn-oats-hay-and-livestock farming. This specific industry makes good use of the level plains with their cover of deep rich soil, the long (five to six months) summer with moderate rains (two-thirds to three-fourths of an annual precipitation of 25 to 40 inches). Moving beyond the limits of the Corn Belt, one finds differences in the natural environmental complex and corresponding differences in the use man is making of the various features—climate, soil, and surface.

1. Major Understandings Growing Out of Studies of Units on Human-Use Regions of the United States

A. *General Nature of Unit Understandings*

Outstanding relations of major human activities to the various elements of the natural environment in each of the major human-use regions of the United States.

B. *Regions Suitable for Unit Studies*

1. Those dominated by extractive industries and extensive agriculture, as grazing and forage belt of the Great Plains, lumbering and fishing belt of the Pacific Northwest, mining and grazing region of the Western Interior, lumbering and turpentine belt of the Southeast, or wheat belt of the Great Plains.

2. Those dominated by more intensive agriculture, as corn and livestock belt of the Middle West, Cotton Belt of the Southeast, subtropical crop belt of the Gulf and South Atlantic plains, dairy belt of the Northern Interior, or irrigation belt of the Southwest.

3. Those dominated by manufacturing, as manufacturing belt of the lower Great Lakes, of southern New England, or of the Middle Atlantic.

C. Generalizations upon the Relations of the Occupational and Population Patterns of the United States to the Natural Environmental Pattern

1. *The Southeast.* The densest rural population of our country is supported on the fertile, well-watered plains of the Southeast. Large areas remain in forests and in them an important lumbering industry is carried on. Considering the variety in soils, slope, and length of growing season, man has found it profitable to develop different types of farming in different areas, such as the Cotton Belt, the subtropical Gulf plains, the Atlantic coastal trucking area.

2. *The Middle West.* A great expanse of flattish to gently rolling land, with exceptionally fertile soil, supports a moderately large agricultural population. In the hot, wet summers grain crops flourish. Much of the grain is used for fattening live stock. This area is the greatest food-producing section of our country. Associated with agriculture are certain types of manufacturing, such as flour-milling, meat-packing, butter-making, canning of vegetables, making of agricultural machinery.

3. *Western United States.* This is a vast area in whose deserts, semi-arid plateaus, and mountains few people live. Here and there in widely scattered locations are small areas so favored by nature with minerals, irrigating water, and choice climate that little 'islands' of moderate to dense populations have developed. In these favored spots people are taking advantage of the riches nature has provided by engaging in mining, lumbering, and farming, and caring for tourists.

4. *The Great Plains.* This is a great stretch of fairly level country, dominated by grazing and dry farming. These industries are best adapted to the semi-arid climate, except where supplies of irrigating water favor more intensive cropping. Only a small population is supported on these semi-arid plains.

5. *The Northeast.* The most densely populated part of our country lies in the Northeast, where there are a large supply of high-grade soft coal, many water-power sites, and easy lowland routes to the rich interior that has surplus foodstuffs and raw materials to sell. The interior waterways help man to assemble bulky raw materials cheaply; the seaboard position and accessibility to many excellent harbors encourage the development of overseas trade.

6. *Tropical Possessions of the United States.* Since no part of the United States, proper, extends into the tropics, it is fortunate that we own lands in frost-free climates where crops that we need can be grown.

7. *Alaska.* A sparsely populated land of considerable size, which is dominated by extractive industries, is Alaska. The production of high-value, small-bulk commodities helps to offset the expense and difficulty that climate and long distance from main routes of travel impose on most of the country. The leading industry, fishing, is located along the most easily accessible coast.

2. Abilities to Be Developed Wholly or Partly through Gaining the Major Understandings

A. Ability to Identify Specific Types of Work as Those Existing in Areas with Specific Natural Conditions

1. Logging only part of the year and sledding logs to the streams is associated with cold, snowy winters, spring freshets, stands of merchantable timber.

2. Year-around logging, floating logs in winter as well as summer indicate winters mild enough that streams never freeze and existence of stands of merchantable timber.

3. Corn, small-grain, hay, livestock farming utilizes five to six months free of frost; hot sunshiny weather in June, July, and August; moderate to heavy summer rainfall; great stretches of level to gently rolling plains with deep rich soil.

B. Ability to Identify Various Combinations of Work and Natural Environment with Specific Locations

Examples: (1) Is the logging described in Example No. 1, above, typical of Maine, Minnesota, Arizona, Washington, Alabama, Illinois? (2) Is the corn-small grain-hay-livestock farming described in No. 3, above, typical of North Carolina, Montana, Iowa, Illinois, North Dakota, Tennessee, Arkansas?

C. Ability to Locate the Various Human-Use Regions by States on an Uncaptioned Map

D. Ability to Apply in a More Exacting Way the General World-Understanding Mastered in Grade IV

The ability to read distance from the equator in degrees and in miles makes possible a refining of the fourth-grade ability. Example: The potato harvest begins in different states in different months. Match the potato harvest of each of the following states to the appropriate month: Maine, New Jersey, North Carolina, Georgia, Delaware, Virginia, Florida, South Carolina.

E. Ability to Associate Density of Population with Types of Work Related to Natural Environmental Factors

Examples: (1) Relatively sparse population in regions dominated by extractive industries indicates mineral deposits, forest resources, fishing grounds. (2) Dense population is to be found in regions dominated by manufacturing and commerce and dependent upon other industries for supplies of raw materials, food, building materials, transportation facilities. Each one of the supporting industries is related to natural conditions in specific areas.

F. Ability to See Relations between the Distribution of Crops and the Distribution of Surface Features, Rainfall, and Length of Frost-Free Season

G. Ability to Identify Uncaptioned Dot Maps of the United States Showing More Significant Crops and Livestock

H. Ability to Identify on an Uncaptioned Map of the United States the Twenty-Five Largest Cities

I. Ability to Recognize Any One of These Cities from a Description of the Use Man Makes of Its Natural Setting

Examples: (1) More ships dock in the deep, roomy, well-protected harbor of this seaport than in the harbor of any other port of the United States (New York); (2) This city's elevators receive wheat from large lake boats. Quantities of wheat are ground into flour in the city's mills, which are operated by hydro-electricity from nearby waterfalls (Buffalo).

J. Ability to Locate on an Outline Map in the Correct State and on the Correct Waterway Each of These Twenty-Five Cities

K. Ability to Locate Important Features on an Outline Map

These should include (1) each of the forty-eight states, (2) each of the Great Lakes and the navigable waterways that connect them, (3) the major rivers, (4) the four major mountain ranges, and (5) each of the major arms of the sea, as Puget Sound, Cape Cod Bay.

L. Ability to Read Maps and Use Map Symbols, as Follows:

1. To identify on the more complex maps (surface, rainfall, temperature) introduced in Grade V, the symbols for cultural and natural items learned on the simple maps of Grade IV.

2. To read from the network of the map (a) the distance in degrees north and south of the equator; (b) an estimate of distance in miles north and south of the equator, using 70 miles as equal to one degree; (c) directions by means of the north-south lines and the east-west lines.

3. To use scale of miles in measuring airline distances from point to point.

4. To read from a surface map (on which elevations are shown by color-bands and contour lines at borders of color-bands) (a) the highest and lowest elevations for which each color stands; (b) the approximate steepness of slope by measuring widths of color-bands; (c) the levelness or roughness of land by noting the shadings within any one color and by noting the irregularity of the borderline between two colors; and (d) the different land forms—plains, plateaus, hill country, and mountains. (Pupils should know that the contour line separating two shades or colors does not indicate a step but that the rise, if the bands are wide, is so gradual as to be imperceptible in the field except with the use of instruments.)

5. To read symbols for human items, as political boundaries—country and state; capital of a country, of a state.

6. To read maps showing distribution of natural features, such as, rainfall, seasonal and annual; temperatures, seasonal;¹ length of frost-free season; native vegetation; coal fields, oil fields, and other mineral resources.

¹ Annual temperature maps and maps showing "torrid, temperate, and frigid zones" are to be avoided, since they lead children to disastrous errors in thinking.

7. To read maps showing distribution of cultural features, like crops and livestock (dot map), population density (color bands or dots), street pattern of cities, highway pattern, and railway pattern.

8. To compare a specific area on one type of map with the same area on other types of maps; for example, an area of heavy concentration of dots on a crop map with the same area on a surface map, a rainfall map, a seasonal-temperature map.

9. To read such relations from maps as road pattern related to surface, street pattern of a city related to topography and waterways, and railroad pattern related to topography.

M. Ability to Interpret Landscapes and Pictures as Follows:

1. To identify such crops as small grains, corn, sugar cane, tobacco, cotton, vegetables, orchard fruits.

2. To identify farm operations, such as plowing, planting, harvesting, irrigating, filling a silo, filling a granary, making hay.

3. To find evidences of whether a certain crop requires much or little hand labor at various stages in its growth.

4. To identify certain types of manufacturing forms, as iron and steel mills, ship-building yards, meat-packing plants, saw mills, hydro-electric power plants and dams.

5. To identify transportation forms, such as railway yards and car shops, canal locks, airports, docks, grain elevators, car ferries, bridges, tunnels, electrified railroads, passenger steamships, freighters.

6. To identify certain mining forms, such as oil derricks, coal mines, open-pit mines.

7. To read from pictures the relations of various land forms to the rainfall.

8. To match a given set of pictures to a given list of places.

9. To sort pictures of farm activities into groups by appropriate seasons.

10. To sort pictures of farm activities, lumbering activities, and transportation activities into groups for the various sections of the United States: the Northeast, the Southeast, the Middle West, the Western Interior, the Southwest, the Northwest.

11. To arrange a given set of pictures of the United States in order from east to west, north to south, northeast to southwest.

N. Ability to Use Statistics and Graphs, as Follows:

1. To use statistics given in round numbers in making multiple-unit graphs, using such symbols as, 1 dot = 100 thousand people, 1 square = 5 million bushels, 1 circle = 100 thousand tons.

2. To use statistics given in round numbers in making a bar graph, using such a scale as a bar of given thickness 1 inch in length = 5 thousand square miles.

3. When given a list of cities and the population of each, to find the largest five cities, the largest ten, or to arrange the whole list in order of size.

4. When given a list of states and the amount or value of the production of a certain crop or mineral, to arrange the states in order of importance of such production.

O. Ability to Use Correctly Certain Technical Terms

dry-farming	subpolar	drowned river-mouth
harbor	levee	rapids
seaport	hydroelectric	population density
site	blast furnace	bedrock
altitude	precipitation	soil
latitude	map scale	subsoil
parallels	isthmus	prairie
semiarid	cape	broad-leaved evergreen
humid	bay	forest
subtropical	fishing banks	

3. Some Special Understandings¹ and Mental Habits to Be Developed through Gaining the Major Understandings

1. Understanding¹ of the dependence of the farmer upon climate, soil, and surface, which are the raw materials he makes use of in producing the various crops. The farmer selects the crop that will fit the particular climate and soil of the area; he fits the time of his field operations to the seasons and the weather.

2. Understanding of the dependence of the mining industry upon the mineral deposits deposited by nature thousands, even millions, of years ago. When man has exhausted a deposit, he no longer can mine in that place. Nature does not replace the minerals that man has used up.

3. Understanding of the dependence of the manufacturer upon the farmer, the miner, the lumberman for the raw materials he needs.

4. Realization of the study the highway engineer or the railroad builder made of the surface of the land when selecting the particular route for a road.

5. Habit, or custom, of consulting a map immediately when reading about a new place.

6. Habit of consulting maps for distribution data rather than depending upon the textual material alone.

7. Habit of seeking statements of authorities.

8. Habit of thinking in terms of geographical understandings concerning many of the everyday activities that one sees about him.

¹The editor takes the responsibility of amending the terminology here and elsewhere in this Yearbook where the terms 'attitude' and 'appreciation' were used by the contributors in a manner that is now becoming common among curriculum-makers, but is not in accord with the definitions given in standard dictionaries or in the forthcoming *Dictionary of Psychology*. 'Understanding' has been substituted for 'appreciation' when the mental activity does not stress the appraisal of values.—G. M. W.

9. Habit of using understandings gained in geography in contributing to the interpretations made in other subjects, such as history and other natural sciences.

IV. THE SIXTH GRADE

The sixth grade advances beyond the study of separate human-use regions into the study of country personalities. The geographic personality of a country reflects the composite of the human-use regions that are within its boundaries. This is a more difficult understanding than that of single human-use regions, for it introduces the interdependence of the various sections of a country. This marks the advance of the sixth grade into the next order of difficulty. Just as each human-use region took on geographic individuality, so each country should take on geographic personality as it is studied.

Canada is doubtless the easiest country of which the American child can understand the geographic personality. Its civilization is almost identical with that of the United States. Many of its human-use regions are extensions of those of the United States. It serves as a transition from the study of human-use regions to that of countries. As such it might find its place at the end of the fifth grade or at the beginning of the sixth.

Western Europe presents countries that are probably not much more difficult to understand than Canada. The civilization of the European countries is essentially similar to that of our own country. Many of the European countries are the homelands of parents, grandparents, and great-grandparents of American children. Relatives of American families are still living in the home country. Contacts between the United States and Europe are many. Added to these advantages is another one of major significance. In Europe, the child will find many of the same human activities that he found in the United States and many of the same types of natural environment. Studying it, he will have an opportunity to make immediate use of the understandings that he mastered through the study of the human-use regions in the United States. It is very important that new situations be provided in which the child can apply understandings previously mastered. The ability to make use of such understandings adds appreciably to the power to think geographically.

After attaining an understanding of the geographic personality of the various countries in which the civilization is very similar to that of the United States, the sixth-grade pupil proceeds to the next order

of difficulty. This is the study of countries in which the racial heritage, the civilization, is very different from that of the United States. Added to this matter of racial differences is the complication of pressure of population upon the land and the attendant lowering of the standard of living. In Asia are striking illustrations of such countries.¹

1. Unit Understandings

A. General Nature of the Understandings

The geographic personalities of countries. Geographic personality of a country may be defined as a generalization of human activities in relation to natural environment, so stated that it is distinctly individual to that country and cannot be applied to any other country.

B. Regions Suitable for the Unit Studies

1. Those whose civilization is very much like that of the United States, as Canada, Australia, British Isles, Germany, France, Czechoslovakia, Spain, Italy, and other European countries or country-groups.

2. Those whose civilization is strikingly different from that of the United States, as Japan, China, India, and other Asiatic countries.

C. Examples of Country Personalities

1. *Canada:* Canada, although it is one of the larger countries of the world, has a very small population. Most of its people live in the southern half of the country, leaving the northern half almost unoccupied except for a few trappers and hunters. On the valley lowlands and the lake plains in the southeastern part of the country is the most important manufacturing and commercial section. On the fertile plains in the south central part is produced the country's chief crop, which constitutes the country's greatest export.

2. *The British Isles:* The British Isles are the seat of a very important manufacturing development, which is based fundamentally upon large supplies of easily accessible coal and smaller supplies of iron ore. The long mileage of seacoast with many good harbors favors the development of trade. The population has outgrown the food-supporting capacity of these islands and depends on overseas regions for a large amount of foodstuffs. The manufacturing industry depends upon overseas regions for many of its raw materials. The British Isles pay for their imports of raw materials and foodstuffs by selling manufactured goods abroad and by carrying in their ships the freight for a large part of the world.

3. *Denmark:* Denmark is a small country of highly specialized commercial agriculture. Taking advantage of its nearness to a large food importer, Denmark has built up a remarkable dairy industry. In spite of its poor soils, the pastures and hay meadows of Denmark are good, for it has mild, moist summers of a true marine climate. Through the organization of coöperatives the product of the creameries has been standardized, and so high is the quality

¹ If other regions are included in the sixth grade, similar understandings and abilities should be developed.—A. E. P.

of Danish butter that the demand is great enough to warrant increasing production beyond the feed-producing capacity of the land. Therefore, large quantities of feeds are imported each year by the coöperatives.

2. Abilities to Be Developed through Gaining Unit Understandings

1. To identify the geographic personality of each of the countries or country-groups studied, when given a statement of the geographic personality of a country with all place names omitted.

2. To identify specific geographic relations as belonging to the correct country or country-group.

3. To identify uncaptioned dot maps of Europe showing the distribution of grapes, citrus fruits, olives, goats, winter wheat, spring wheat, sugar beets, rye, flax, corn.

4. To identify from a description of utilization of the site such cities as London, Liverpool, Glasgow, Copenhagen, Leningrad, Venice, Berlin, Hamburg, Geneva, Paris, Marseille, Hong Kong, Shanghai, Hankow, Canton, and Singapore.

5. To recognize from a sketch map of the immediate site such cities as London, Liverpool, Paris, Venice, Marseille, Copenhagen, Shanghai, and Berlin.

6. To locate on an outline map of Europe (a) each of the countries or country-groups studied; (b) each of the following cities: London, Liverpool, Glasgow, Edinburgh, Belfast, Dublin, Paris, Marseille, Amsterdam, Rotterdam, Antwerp, Oslo, Stockholm, Leningrad, Moscow, Madrid, Athens, Venice, Rome, Berlin, Hamburg, and Istanbul; (c) each of the following rivers: Rhone, Rhine, Po, Danube, Volga, Elbe, Seine, and Ural; (d) each of the following mountain ranges: Alps, Urals, Pyrenees, Apennines, Carpathians, and Caucasus; and (e) each of the following seas: Mediterranean, Adriatic, White, Black, North, Irish, Baltic, and Aegean.

7. To locate on an outline map of Asia (a) each of the countries and country-groups studied; (b) each of the following cities: Peiping, Shanghai, Canton, Manila, Tokyo, Yokohama, Vladivostok, Hong Kong, Rangoon, Calcutta, Bombay, and Singapore; (c) each of the following rivers: Hwang-Ho, Yangtse, Si-kiang, Ganges, Indus, Tigris, and Euphrates; (d) each of the following bodies of water: Persian Gulf, Bay of Bengal, Straits of Malacca, Red Sea, and Arabian Sea; and (e) each of the following highlands: Plateau of Tibet, Plateau of Mongolia, and Himalaya Mountains.

8. To match human items to natural environmental items when given a carefully selected list of each for a specific area.

9. To select from a given list of geographic relations those typical of a specific country.

10. To complete a geographic relationship when given the human item in a specific location.

11. To read maps, as follows: (a) to read longitude, (b) to apply longitude-reading in the calculation of standard time, and (c) to find a place, when given the latitude and longitude.

12. To use maps, as follows: (a) to *trace* a map accurately, and (b) to express on the traced map or on a printed outline map the location of specific places pertinent to the problem in hand, the distribution of population densities by means of an overprint, and the distribution of products by means of the multiple unit system (1 dot equals so many bushels, tons, or the like), or by means of an overprint system.

13. To read pictures, as follows: (a) to select from a given set of pictures those typical of a specific country that has been studied, and (b) to differentiate pictures of cultural features in natural settings from pictures that show only cultural items with no clew as to the natural setting and from pictures of natural features with no evidence of man's occupancy.

14. To use statistics and graphs, as follows: (a) to calculate population densities of countries, (b) to calculate per acre yields, and (c) to make multiple-unit graphs and bar graphs without having the scale prescribed.

15. To use correctly such technical and semi-technical terms as

longitude	high latitudes	export
standard time	marine climate	import
meridian	Mediterranean climate	natural environment
low latitudes	monsoon	geographic relation
middle latitudes	merchant marine	tributary area
	per acre yield	

3. Some Special Understandings and Attitudes to Be Developed through Gaining the Major Understandings

1. Realization that people in countries not so well endowed with minerals, agricultural land, and other natural riches should not be judged by the same standards as the United States. Judge people in the light of what they have done with what nature provided for them. If natural resources are poor and the people have accomplished much, they deserve high commendation.

2. Willingness to give credit where credit is due. Much of what has been accomplished in the utilization of natural resources in the United States is due to the long experience of Europeans in utilizing the resources in their home country. Europeans came to the United States and brought the benefit of their experience to bear upon mastering a new situation.

3. Understanding that it is well, when traveling in a foreign country, to accept the ways of the people there and refrain from continuously talking about and demanding things we are accustomed to have at home.

4. Realization that if the American thinks the foreigner queer, one may be quite sure that the foreigner thinks the American equally queer.

5. Unwillingness to conclude that all the people of a foreign country are like the few from that country whom we may have happened to see in the United States.

6. Realization that people of different races have different ideas on many subjects, that people of different races may use identical natural resources in very different ways; but unwillingness to believe that any one race is better than any other race in all respects.

CHAPTER XVII

GEOGRAPHY IN THE JUNIOR HIGH SCHOOL¹

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I. GENERAL CONDITIONING FACTORS

1. Variation in Geographic Background and Needs

In a determination of objectives, content, and teaching procedures at any given level of geographic instruction, the child's geographic background and needs are vital factors. Since at present there is wide variation in the geographic training that children receive in elementary schools, there is, of course, wide variation in the types of background that children bring to the study of geography in the junior high school or in Grades VII, VIII, and IX in schools organized on the 8-4 plan.² Testing has shown, for example, that many seventh-grade pupils are not possessed of the simple type of world-understanding that has been

¹This chapter represents in substance a report of a subcommittee appointed by the Yearbook Committee and operating under the chairmanship of Mrs. Graham, who in turn consulted freely with Professor Thralls. As in the case of other chapters dealing with the curriculum in geography, the report of the subcommittee was submitted to the Yearbook Committee, was carefully studied by that Committee, was returned to the subcommittee with certain suggestions for its modification, and was revised in accordance with these suggestions. It may, in consequence, be understood by the reader as presenting substantially the views of the Yearbook Committee. See, however, footnote to Chapter XVI for certain qualifications, and Professor Stull's note to the discussion of topics in Subsection I, 5 of this chapter for other qualifications.—A. E. P.

²The term 'junior high school' is used throughout this discussion merely to denote Grades VII, VIII, IX, regardless of whether these grades are organized as a separate administrative unit or as parts of an 8-4 (elementary-high school) plan of organization.

indicated elsewhere in this Yearbook as a major outcome of fourth-grade work¹ of high quality. The immediate needs of a child who does not have this and other important elementary geographic understandings differ, of course, from those of a child who has gained all the understandings and abilities that elementary experiences of the highest type yield. Since immediate needs vary as widely as background, immediate objectives must vary in like degree, and there can be stated no single group of outcomes, the attainment of which is equally practicable for all junior-high-school pupils in geography. In view of these conditions, this subcommittee decided to make its proposals in terms of attainments that, in the light of all evidence available, are practicable for pupils whose elementary experiences have resulted in the outcomes indicated in the preceding chapters of this discussion of the curriculum.

The grounds on which the foregoing decision was reached are the following:

1. Only by assuming the proposed elementary achievements in geography, and by building carefully on them, can those elements that constitute the highest order of junior-high-school achievement in the subject be derived.

2. Only by basing proposals on the assumption of a very specifically defined elementary geographic background can the exact relation that junior-high-school work bears to the entire scheme of geographic training be shown. The distinctive types of contributions that junior-high-school geography makes to geographical thinking can thus be thrown into strong relief, the kinds of geographical experiences that belong peculiarly to this stage of development can thus be clearly indicated, and the marked differences between the highest type of junior-high-school work and elementary work on the one hand, and between junior-high-school work and senior-high-school work on the other hand, can thus be made apparent.

3. Proposals made on this basis can readily be altered to meet specific situations by increasing the list to include elements designed to help children reach elementary goals that they have not previously attained.

4. In any event, children in the junior high school should proceed as far as they can toward the objectives of the highest type of junior-high-school work in geography, even if they cannot reach all the desirable goals because of the unsatisfactory quality of their earlier training in the subject.

The plan for junior-high school geography that follows is designed, then, to build upon the work of elementary-school geography as set forth in the preceding chapters. The content selected should fit naturally into the pattern of geographic education, neither repeating, overlapping, nor leaving a gap in that learning pattern.

¹See Chapters XV and XVI.

2. Difficulty

The relative difficulty of the concepts, ideas, and relationships involved in each big block of subject matter¹ has been considered in selecting and placing it in the junior-high-school program. Furthermore, it has been kept in mind that junior-high-school children are more mature and are capable of handling more complex concepts, ideas, and relationships than the intermediate-grade child. Even if they lack some of the desired simple understandings, they can acquire those understandings in an organization of materials on a higher level than that of previous stages.

3. Social Import

The social import, or functional value, of the material selected has also been taken into consideration. As the analysis reported by Professor Parker in Part II of the values of geographic understandings indicates, understandings of various regions of the world are necessary before one can see the relationship between conditions in the home country and other parts of the world. Therefore, the larger blocks of material have been so selected and so organized as to leave with the children a world-understanding of greater scope and richness than that gained earlier, and a clear understanding of the interrelationships between conditions in their own country and the natural and cultural environmental complex of the world.

4. Current Practices

Current practices have been taken into consideration in formulating the proposals. This subcommittee made a survey of various studies, reports, and magazine articles dealing with geography in the junior high school.

H. Harrison Russell, a member of the subcommittee, made a statistical study of the present status of geography in the junior high school.² His report shows that 34 percent of 126 cities of 50,000 or more population have allotted two full years to geography in the junior-high-school programs. North America (or the United States) is suggested in these courses as an area to be stressed. Among the cities surveyed, the report shows that some cities have no courses of study; that some have old time-worn courses that were proving unsatisfactory to teachers and supervisors; and that in others the courses are being

¹ See Section II of this Yearbook.

² See Section VI of this Yearbook.

revised. The most wholesome aspect revealed by this research is an expressed desire on the part of teachers, supervisors, and principals for expert help in the problem of building a geography curriculum for the junior high school.

A study of junior-high-school textbooks, made by Olive C. Fish,¹ shows that North America receives chief emphasis in the junior high school. Vivian Raybold of California made a study² of method and equipment. In addition to these, a report of the committee of the National Council of Geography Teachers³ was also taken into consideration in formulating the proposals in the present chapter.

Finally, a study was made of magazine articles on junior-high-school geography, because these indicate trends in the objectives. In addition trends in method are suggested and content suitable for this stage is often included. Since many articles have been written by men and women who have been thinking and working in this field for years, and since they see junior-high-school geography in its relation to the complete world-geography pattern, this material is considered significant.

II. MAJOR OBJECTIVES

With the foregoing considerations in mind, the following understandings, abilities, habits, and attitudes are set up as the objectives to be accomplished through the junior-high-school geography program.

1. Types of Major Understandings to Be Gained

- A. Major understandings of Level Four difficulty—that is, understandings of the individualities of the major countries in which such relatively abstract factors as foreign political control, transplanted cultures, standard of living, results of expansion of Europe and the United States, and standing among other countries enter into man's adjustment to the natural environment.
- B. An understanding of the world in terms of population pattern, work pattern, political pattern, and the natural environmental facts that help to explain these distributions.
- C. An understanding of how the ways of living and the means of earning a living in given specific regions are related to the utilization of natural resources in other parts of the world. On the bases of functional value the specific region selected to be studied first in its world relations would

¹ Olive C. Fish. "The aims and content of junior-high-school geography." *Journal of Geog.*, 26: Nov., 1927, 313-321. (See also Chapter XXVIII, Title No. 19.)

² Vivian Raybold. "Active Geography in the Junior High School."

³ *The Journal of Geography*, 26: Sept., 1927, 207-219.

naturally be the home country and in such a study the home state and the home community would receive appropriate stress.

2. Major Types of Abilities to Be Gained

- A. Increased ability to secure for oneself (from actual landscapes, pictures, maps, models, specimens, graphs, statistical tables, diagrams, and word matter) descriptive ideas concerning human and natural features or conditions. Increase in this general ability involves: first, strengthening of it by repeated use of such specific abilities of this sort as have already been gained in earlier training; and second, development of new specific abilities of this type. Only the new ones are here listed, since those to be strengthened have been indicated in the elementary list.
1. Ability to recognize in actual or pictured landscapes man-made, man-altered, or natural features that are useful in gaining understandings of the types listed above, and that have not been observed in earlier study. For example, in a study of how United States trade is related to natural environment, various features of port development, not before needed, are significant.
 2. Ability to recognize and get descriptive information from the following types of maps, which probably have not been used in earlier work:
 - (a) Temperature and pressure maps.
 - (b) Possibly the topographic map of the home locality.
 - (c) Large scale maps of small areas.
 - (d) Maps of harbors.
 - (e) World trade and trade-route maps.
 - (f) Possibly weather maps.
 3. Ability to read specific information from the following types of graphs,
 - (a) The circle graph.
 - (b) The combination graph (two or more things are shown; *e.g.*, temperature by a line and rainfall by bars).
 4. Ability to read facts of geographical significance from a greater variety of statistical tables and more complicated types. (In the earlier stages only very simple statistical tables have been used.)
- B. Increased ability to secure interpretive ideas from varied sources (actual landscapes, pictures, maps, models, specimens, graphs, statistical tables, diagrams, and word matter). Increase in this general ability involves the strengthening of such ability as has already been gained or the development of new specific abilities of this type, such as these:
1. To use a group of pictures of a specific region to draw inferences concerning probably geographic relationships.
 2. To check more carefully than formerly the suggested relationships.
 3. To raise geographical problems of a high level, based on facts shown in the pictures or landscapes.

4. To make inferences concerning probable relationships:
 - (a) From a comparative study of several types of maps of a region or area.
 - (b) From a topographic map of the home locality.
 - (c) From the facts given on a harbor map, problems such as why the docks are located in a certain place; why certain harbor activities are concentrated at a certain place; the relation of depth to location of buoys.
 - (d) Between certain ocean trade routes and various natural conditions.
5. To raise geographical problems of a high level that have to do, for example, in landscapes, with contrasting types of culture suggested in the landscape, contrasting methods of work, suggestions of life in the homelands of contrasted peoples; in connection with maps, problems which have to do with political ownerships and stages of development as indicated by the distribution and number of certain features.
6. To see the geographic significance of certain lines of latitude, such as the 40th parallel, and certain lines of longitude, such as the 100th meridian, which are standard time lines.
7. To see the exact location of any region and the part of the earth's surface it occupies in terms of latitude and longitude.
8. To think in terms of varying lengths of degrees of longitude as contrasted with the very slight variation in lengths of degrees of latitude.
9. To see relationships between certain significant ocean routes and the shape and location of the land masses they connect, natural terminal facilities, and earth distances.
10. To read the relationship between the several kinds of information shown on a combination graph.
11. To make inferences and raise geographical problems from a variety of statistical tables.
- C. Increased ability to express information gained from statistical tables in graphic form.
- D. Ability to express diagrammatically information and ideas gained from maps; also information gained from other sources.

3. Habits to Be Developed

- A. The habit of using a variety of sources of information for comparing and of checking one against the other.
- B. The habit of turning to geographic tools in seeking information and in forming tentative conclusions concerning policies of the community, the state, and the nation when the questions involve man's adjustments to natural environment.
- C. The habit of holding all such conclusions as tentative until all available, reliable data are examined.

- D. The habit of recognizing that changes in man's cultural and natural environment must be expected and as such should be anticipated.

4. Major Types of Attitudes or Insights to Be Gained

- A. A deepening of those attitudes or insights listed in the attainments of Levels One, Two, and Three.
- B. An understanding of the economic and cultural interdependence of countries and peoples that grows out of the numerous multi-regional relationships between work in the colonies and natural conditions in centers of expansion. Although the realization of interdependence grows gradually from the beginning of Level Two, it is only after children trace many relationships between activities in one country and natural conditions in other countries, as they do in Level IV, that they begin to sense the extent and amount of interdependence of the earth's peoples.
- C. An understanding of how man's own characteristics, political factors, stage of development, inherited institutions, and other human factors enter into his adjustment to the natural resources in a given region.
- D. Greater sympathy and understanding of peoples, based on a realization of how their political and economic problems are related to conditions in various parts of the world as well as the natural environment in their own regions.
- E. An appreciation of the important part that natural resources of a country play in explaining its standing among other countries.
- F. A realization of the value of geographic understandings in enabling the individual to give intelligent consideration to current problems—individual, community, national, and international.
- G. An understanding of the more complex maps introduced at this level, and a greater appreciation of the value of all maps.
- H. An increased interest and greater enjoyment in the reading of geographic and semi-geographic material of a high quality.
- I. Greater interest in actual or pictured landscapes, especially those that give ideas connected with the understandings already listed for these levels.
- J. A sense of the value of accurate statistical material in securing geographic information and in forming tentative conclusions.

III. PROPOSED JUNIOR-HIGH-SCHOOL PROGRAMS

1. General Nature

At the junior-high-school level are introduced such factors as foreign political control, the meeting of different races through such control, reasons for political expansion of certain countries, transplanted cultures in contact with native cultures, foreign financial and political dominance, stage of industrial development, and standing as to world power. These factors complicate man's adjustments to a given natural environment. Such complications are, the Committee

believes, beyond the understanding of an elementary-school child and are distinctly of junior-high-school level.

The regions of the world that require a consideration of such factors are: (1) those that are now colonies, such as French Africa or the East Indies; (2) those now passing through the colonial stage, as India; (3) those that have passed comparatively recently from a colonial status, such as Latin America. (In the latter case, a small group of European descent is superimposed on a large native population. Foreign commercial interests are endeavoring to develop the natural resources, and thus another factor enters into the complex.) The general theme, then, with which Level Four deals is that of adjustments in which 'Europe Abroad' plays a large part, or adjustments explained in part by 'European Expansion.' Most of the regions that furnish illustrations of human complexes of these types are in Latin America and Africa.

Two sets of relationships are to be observed in understanding the chief human traits of the countries that are of Level Four difficulty: (1) the relationships to the natural environment within the country, and (2) the relationships to natural environment in countries from which the outsiders have come. Moreover, one cannot see such relationships without realizing that many activities in the European homelands are related, first, to the natural environment in Europe, and, second, to the natural environment in the regions controlled by European countries or by peoples formerly transplanted from Europe. It makes little or no difference in naming the divisions of subject matter needed in developing understanding of this fourth level whether names in terms of the controlling regions, as, for example, France in Africa, are used, or ones in terms of the regions thus controlled, as, for example, French Africa. It also makes little difference whether one thinks of Level Four, as a whole, in terms of geographic adjustments in which results of European expansion play a significant part or in terms of the continents in which such adjustments are most readily observed. It is of vital significance, however, in either case, that the material be so organized as to lead to understandings of: (1) major relationships between the human complexes in Latin American, African, and other colonial regions to natural environment in the regions themselves and in Europe, (2) major relationships between colonizing activities in European colonizing countries and natural environment in the lands

colonized, and (3) a world-view, based on the addition that these understandings make to those gained at earlier levels.

It is to be noted that the work of Level Four is distinguished from that of earlier levels not only by the different type of geographic understanding and the greater difficulty of this type (since this type inevitably involves multi-regional relationships as contrasted with internal or intra-regional geographic relationships), but also by the fact that at this fourth level a *world-view of a comprehensive type* is possible. The world-view that helps to characterize Level Four of geographic training involves understanding of how major facts about (1) the distribution of people in the world, (2) the distribution of human-use regions, and (3) the distribution of colonizers, of colonies, of independent lands where transplanted people exert an influence over native peoples akin to foreign control and of independent lands where there is no such combination of cultures are *all* related to the world natural environmental pattern.

Only after one has a comprehensive world-view of the type indicated in the discussion of Level Four, is he ready to see to the best advantage understandings of Level Five. In Level Five a region or a nation is placed in its relation to the world natural environment. From the point of functional value, the United States would be the first region studied. Since activities in the United States are related through trade, immigration, travel, international agreements, and exchange of ideas to the natural environment in all parts of the world, one cannot understand many of these relationships until he has had the comprehensive world-understanding noted as a distinguishing feature of Level Four. In such a study of the United States one sees, for example, how the drinking of coffee, the manufacture of linoleum, the canning of beans, the raising of sugar beets, the percentage of unemployed people, the standard of living, the importation of most of the raw silk of the world, attitudes concerning tariffs—in fact how any one of numerous major human activities in one's community or state or in the United States—is related to natural environments in other lands. Only by tracing an adequate number and variety of these activities, attitudes, and conditions in a concrete detailed way to their natural bases abroad as well as at home can one gain a real understanding of interdependence and of 'Dependent America.' To see one's own community or one's own state in the real rôle it plays in world affairs results in an insight without which no citizen can make sound judg-

ments concerning many community and state problems of everyday living.

2. The Seventh-Grade Program

It is obvious that the junior-high-school program that is consistent with these facts is one that provides in the seventh grade for *a world view*, in which understandings gained at elementary levels are supplemented with specific new understandings of geographic adjustments, in which results of European expansion are important factors. This may be variously called: 'A World View, with stress upon the *Geography* of European expansion'; '*Geographic* Aspects of European Expansion and their Relation to *World Geography*'; '*World Geography*, with stress upon *Geographic* Adjustments in Latin America and Africa'; '*The Geography* of the Southern Continents and Its Part in *World Geography*;' or '*World Geography*, with stress upon the *Geography* of Colonized Regions and Colonized Activities.' Each of these themes, or designations, can lead to major geographic understandings (regional and world) of Level Four type.

3. The Eighth- or Ninth-Grade Program

Following such work as has thus been indicated for the seventh grade comes the fifth level of understanding. This may be variously called: '*The Geography* of the World Relations of the United States'; '*Our Country and World Geography*'; '*The Interdependence of the United States and Other Countries*'; '*Our Country, State, and Community in their Geographic Relations to the World*'; or '*The United States and Its World Relations*.'

Since there are two levels of geographic training, Four and Five, which, as the Committee sees the problem, belong peculiarly to the junior-high-school period, and there are three grades, VII, VIII, and IX, there obviously is some leeway in the allocation of material to specific grades. While it is felt by the Committee to be highly desirable that instruction of Level Four be given at the earliest junior-high-school level, because of the contribution such work makes to other subjects as well as to later work in geography, there seems to be no similarly compelling reason for allocating work of Level Five definitely to the eighth as against the ninth year. In some systems it may be introduced more conveniently in the eighth; in others, in the ninth grade. The earlier it is presented, the more, perhaps, the understand-

ings gained can function in other learning and thinking. On the other hand, a child in the ninth grade can bring more maturity and general experience to such a vital theme as 'The Geography of the World Relations of the United States' than he can in the eighth grade.

There also is leeway in the matter of time allotted within a given junior-high-school year to the major themes indicated. An entire year's work may be devoted with profit to each. Much wider and more intensive grasp of each can be gained from two years' work than from a half year in the seventh and a half year in the eighth or ninth grades. Nothing but a year's course at Level Five would afford opportunity for a vital, detailed study of national and state geographic adjustments viewed in their world natural setting. But, until the truth about the relative values of these understandings and those gained in other subjects at this level is established, it cannot be proved objectively that an entire year should be devoted to each theme. The strongest statements that can truthfully be made are: (1) that much more value would be derived from two semester courses at Level Four and two at Level Five; (2) that children who do not have *at least* a semester's work (or equivalent) with each of the major junior-high-school geographic themes are seriously handicapped for want of a well-rounded perspective to bring to bear on the solution of problems of everyday living; and (3) that, although meager insight is better than none, only meager insight can be gained into the geography of world relations of the United States in one semester. The Committee believes that further experimentation and demonstration of relative values will undoubtedly result in the universal practice of assigning four semesters in the junior high school to geography—two in the seventh, and two in the eighth or ninth years; that it is unreasonable to consider assigning to so vital a subject less than $\frac{1}{16}$ (two semesters) of the junior-high-school time; and that its value seems to warrant assigning to it $\frac{1}{8}$ (approximately four semesters) of junior-high-school time.

4. Other Possibilities

At this point the Committee wishes to call the attention of the reader to the discussion in Chapter XV of work in the sixth grade. The proposals for this sixth-grade work were: (1) that an attempt be made to give experiences with all major countries of the world; (2) that experiences be given by treating in detail only the most significant countries with the others merely mentioned; and (3) that experiences

in the sixth grade be given only with units of Level Three and that the units of Level Four be reserved for later.

Regardless of which of these three plans is followed, the seventh-grade program dealing with Europe Abroad, here recommended, will be appropriate. Whatever units are chosen for the sixth-grade program, they are treated, according to that recommendation, on a third-level basis in which internal, not external, relationships are stressed. The more complex interregional relationships and the interpretation of the world political pattern would be beyond the ability of the sixth-grade child.

It would be possible, however, as an alternative for the junior-high-school program recommended, to present a seventh-grade view of the United States in Its World Relations after any one of the sixth-grade programs outlined. In the course of such a view, the child would study the countries not treated in the sixth grade. He could not, of course, bring to his seventh-grade study anything like so broad and deep a background as he could if he were possessed of Level Four understandings. This difference in background would necessitate, if this plan were followed, a simpler treatment than the one discussed and the omission of various understandings for which eighth- or ninth-grade treatment would provide.

It would be desirable, if 'The United States in Its World Relations' were treated in the seventh grade, to follow it with a 'Europe Abroad' fourth-level course, in which the new intercountry relationships were from time to time applied to the interpretation of affairs in the United States. In this way, children might, by the end of the course, have elaborated their understanding of the ways in which our affairs are related to natural environment elsewhere so that it would approximate a fifth-level understanding.

This Committee recommends the programs for seventh and eighth grades as outlined in this chapter on the strength of the personal experience of its members and of many other junior-high-school teachers. The Committee understands clearly that its judgment cannot be fully substantiated at the present time by experimental evidence. Such experimentation as would determine the relative values of these programs would necessarily be based on the experimentation already discussed in connection with sixth-grade work. Sixth-grade groups having the specific types of preparation discussed should be used in such an experimental study. They should be carried on through the seventh- and

eighth-grade programs, and then their achievements should be measured with tests that really test geographical thinking and ability to use geographical tools.

5. Topics Suitable for the Proposed Programs

The following four different series, or arrangements, of topics are suitable for the *seventh-grade* program as outlined earlier in this chapter.¹

Series I

- I. European Expansion in Africa
 1. France in Africa
 2. Italy in Africa
 3. Belgium in Africa
 4. Britain in Africa
 5. Summary of the Geographic Aspects of European Expansion in Africa
- II. Survey of Africa as a Whole
- III. The Adjustments of European Peoples in Latin America
 1. The Spanish-American Countries
 2. Brazil—the Portuguese in South America
 3. The French, Dutch, and British Guianas
 4. Europe and the United States in the Caribbean
- IV. European Expansion in Middle and Far Eastern Asia
- V. Australia
- VI. World Survey—Summary of the Geographic Aspects of European Expansion and Their Relation to World Geography

Series III

- I. The British Empire
- II. The French Empire
- III. Latin America
- IV. World Survey

Series II

- I. European Expansion in Latin America
 1. The Spanish-American Countries
 2. Brazil
 3. Europe and the United States in Latin America
- II. European Expansion in Africa
 1. The French in Africa
 2. The Italians in Africa
 3. Belgian Congo
 4. The British in Africa
 5. Summary of the Geographic Aspects of European Expansion in Africa
- III. The Changing Nations of the East—Japan, China, India—as Affected by the Impact of Western Culture
- IV. World Summary, Stressing the Geography of European Expansion

Series IV

- I. Latin America
- II. Africa
- III. Australia
- IV. A World View

¹As a member of the Yearbook Committee I desire to make the following comment at this point: A critical examination of these four series will reveal little

For the *eighth- or ninth-year program*, in which it has been proposed that 'The United States in Its World Relations' shall be the central theme, some arrangement of the following twelve topics would be desirable. This particular sequence is merely suggestive.

- I. The many types of ways in which we depend on other peoples and other peoples on us; for example, in travelling, in exchange of commodities, in exchange of workers, in exchange of ideas, in international communication devices, in protection of trade routes. The story of the North Atlantic Ice Patrol¹ illustrates the type of relationship to be brought out in this introductory unit. The idea is to see a variety of such relationships in order to understand the many ways the lives of people are tied together. Having seen the scope of these relationships, each following unit is devoted to those of a particular type.
- II. Factors on which the nature of our part in world trade depends.
 1. Our export trade
 - (a) Outstanding facts that characterize it
 - (b) Reasons for those facts
 2. Our import trade
 - (a) Outstanding facts that characterize it
 - (b) Reasons for those facts
- III. Factors upon which our large part in world trade depends. Natural resources at home; some things we have in abundance and others we do not have and now use. (This calls for a re-survey of some major ideas gained in Level Three.)
- IV. How agricultural activities in the United States are related to activities in other parts of the world as well as to conditions at home.

vital difference among them. They all call for the study of Latin America, Africa, and Australia in the first year of the junior high school.

As an alternative to the one thus recommended by the Subcommittee on the Junior-High-School Program, I wish to propose the following program:

Grade VII

- I. The Basic Study of Europe and Asia
- II. An Incidental Treatment of European Expansion Overseas

Grade VIII

- I. The Economic (Industrial and Commercial) Geography of the United States
- II. The United States from the Standpoint of World Relationships

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¹ W. H. Burton. *Supervision of Elementary Subjects*, Ch. VI, p. 296 (Appleton, 1929).

H. N. Leppard. *The Supervision of Geography*.

- V. How manufacturing activities in the United States are related to natural and economic conditions in other parts of the world as well as to conditions at home.
- VI. How various other types of activities, such as mining, logging, and the like, are related to natural environments in other parts of the world as well as at home.
- VII. How our pleasures are related to natural conditions in other lands—travel, art.
- VIII. How the daily life of an individual in the United States is related to natural conditions in other lands as well as to his immediate surroundings.
- IX. How the make-up of our citizenry and the problems arising out of the variety of peoples in our 'melting pot' are related to natural environmental conditions in other lands as well as in the United States.
- X. How our future depends in part on the wisdom with which we use natural resources in our own land and those from other lands, and on our successful coöperation with other peoples in the use of earth resources.
- XI. How the part that one's own state plays in the life of the world is related to natural conditions in the state and in other parts of the world.
 - 1. Its population-supporting capacity
 - 2. The nature of the support it affords and reasons for it
 - 3. The ways in which it contributes to other parts of the world and the ways in which other parts of the world contribute to it, and reasons
 - 4. Prospects for future coöperation
- XII. How the part one's city or community plays in the life of the world is related to natural environment in other parts of the world as well as to immediate surroundings.
 - 1. How the wiping out of the locality would affect others
 - 2. How various changes in lands near and remote would affect life in our locality
 - 3. How the size and growth, shape, layout, types of people, and special problems of our community are related to the local natural environment and to natural environment elsewhere.

The study of the home community and the home state may come before or after the study of the United States in its world relations. If considerable time is given to the survey unit and much emphasis is placed upon the multi-regional relations within the United States, then the home community and the study of the home state may either be used as the starting point or be woven into the general pattern where it fits. From another point of view the study of the home community,

with its opportunity for systematic field work, makes an excellent capstone for the junior-high-school geography work, especially as the children bring to it a new point of view, just as the returning traveller views the familiar scenes with new and more mature vision.

6. An Illustrative Seventh-Grade Unit: French Africa

I. Major Understanding and Supporting Ideas

The major understanding to be acquired in a study of French Africa is that the interest of the French in their African colonies is due in part to the possibilities of these colonies as a source of foodstuffs and raw materials and the increased political standing that is gained through command of them. To secure these foodstuffs, raw materials, and the services of the colonial peoples, and to render the colonies assistance in the form of improvements demanding capital, which the colonial peoples do not have, the French are developing these regions by building modern railroads, highways, and ports and are carefully avoiding unnecessary interference with native life. The ability of these regions to furnish foodstuffs and raw materials to France is related to various natural conditions found in France. In the course of developing this understanding ideas such as the following are developed:

Of all her African colonies, those bordering on the Mediterranean are of the greatest value. The hot, dry summers and the mild rainy winters along the Barbary coast make possible the production of wheat, barley, grapes, olives, citrus fruits, and vegetables. All of these find a ready market in France. The Atlas Mountains shut off the rain-bearing winds, a fact that helps to account for the decline of agriculture as one goes farther south. This fact also helps to explain the raising of sheep in the higher lands. Sheep, wool, sheepskins, and goatskins are exported to France. The mineral resources are phosphate rock, iron, lead, and zinc. The development of the minerals is related to the richness of the deposits and to the comparative nearness to western Europe where there is a demand. In return, the colonial people are afforded means of making various uses of their surroundings that they could not otherwise make.

French West Africa is of little importance commercially, owing in part to the fact that it is composed of the largest desert lands in the world. Its people are those who make permanent homes in the oases or who travel from place to place in search of bunch grass for their animals. Only where an oasis is supplied with an abundance of water is agriculture of any importance. France is contemplating a railroad from the countries bordering the Gulf of Guinea to cross the Sahara and to terminate at the shores of the Mediterranean Sea. Owing to the unproductiveness of the land through which it must pass, this railroad will be of little value other than for unification purposes.

The countries south of the desert are of little value at present because of poor harbors; lack of accessibility to the interior; the distance from Europe and from the coast; the hot, humid, rainy climate; the dense forests;

and the limited culture of the native population. The chief products are palm-oil nuts, palm oil, mahogany, ebony, and okume (a cabinet wood like mahogany) from the hot, rainy, forested regions, and peanuts, wool, and hides from the drier interior.

II. Motivation and Directions

1. Examine the political map of Africa. Approximately what percent of Africa is dominated by France? Make a list of the countries in Africa that are in the possession of France. In what part of Africa are most of the colonies located?

2. Examine the population map of Africa. What part of the French possessions are the most densely populated? What areas have less than one person per square mile? What reasons are suggested by the physical and climatic maps for the distribution and density of population in French Africa? (To be followed with appropriate guiding questions of a more detailed character on the location of the French colonies and possessions.)

3. As you continue the study of the French possessions in Africa, find all the reasons you can that will help to explain the following questions: Why has France acquired and retained the colonies in Africa that have comparatively unfavorable climatic and surface pattern? Why is Algeria France's most valuable possession? How do Morocco and Tunisia compare in importance with Algeria? What natural and cultural factors are unfavorable for greater development in French West Africa? Of what value are the countries that touch on the Gulf of Guinea? What natural and cultural factors help to explain why French Equatorial Africa is in a backward stage of development? Why is France interested in East Africa? Why did she annex French Somaliland? Is Madagascar an asset or a liability? How do natural conditions in France itself help to explain these facts about French colonies?

III. Assimilative Exercises

Why has France acquired and retained the colonies in Africa that have comparatively unfavorable climatic and surface conditions?

1. Assimilative readings: See reference list at close of the unit.

2. Tools: Physical map of Africa, political map, summer and winter precipitation, population and vegetation maps. Graphs showing population per square mile; foreign trade. A selection of pictures of high geographic value, showing desert scenes, the pass of El Kantara, market place, an oasis, gathering and sorting dates, native and European quarters in one of the coast cities, a Berber village, a scene upon the plateau section, a caterpillar truck in the desert, a desert policeman, etc.

3. Subproblems: How did France secure so much territory in Africa? On what basis did France claim the west coast of Africa? How did France win Algeria? When did it annex Tunisia? How and when did it secure the Sahara Desert? Why did it want the Sahara? When did Morocco come under French domination? How did French Somaliland and Madagascar be-

come possessions? Why is Tangier an international city? Why is Algeria France's most valuable possession?¹

4. Summary: Summarize what has been learned from the study of the maps and statistics.

5. Application: (a) Change the statistics referred to above into graphs and explain the significant factors portrayed by each graph. (b) Find as many pictures as you can that show kinds of work in Algeria. Use these to begin your African picture book. Attach the title to each. Write one or two good questions covering the subject matter of each picture. (c) Write a paragraph explaining why Algeria is France's most valuable possession. (Morocco and Tunisia are studied in a similar manner.) (d) Write a paragraph comparing and contrasting how man has adjusted his activities to fit the climatic conditions prevalent in Algeria, Morocco, and Tunisia. (e) List various activities and conditions in France that would be altered if France had no African holdings. (f) List various activities and conditions that would be altered in the colonies if the French were to withdraw. (g) What do these facts show you about the interdependence of these peoples?

The other colonies of France in Africa are developed with a series of similar exercises. Space prevents further discussion. The following are illustrative of types of tests that may be given.

IV. Test on French Africa

Section A

The following tables show the exports of six French colonies. Decide which table belongs to which colony and write the name of the colony below. The colonies are Algeria, Tunisia, Morocco, French Equatorial Africa, French West Africa, and Madagascar.

Table I

Peanuts	\$22,208,000
Cocoa beans	3,844,000
Palm kernels	4,131,000
Cabinet woods	2,687,000
Gum arabic	2,428,000

Table II

Wine	\$57,042,000
Wheat	6,357,000
Iron Ore	5,792,000
Sheep	5,154,000
Barley	4,204,000

Table III

Olive oil	\$11,432,000
Wheat	9,284,000
Phosphates	7,098,000
Barley	4,903,000
Wine	2,841,000

Table IV

Vanilla beans	\$ 2,996,000
Hides and skins	1,901,000
Raffia	1,658,000
Frozen meats	964,000
Coffee	959,000

¹ Extended details with respect to Algeria have been omitted at this point of the illustrative unit to economize space.—*Editor*.

Table V

Okume	\$ 3,565,000
Animals, live	633,000
Rubber	397,000
Palm kernels	373,000
Ivory	233,000

Table VI

Phosphate rock	\$ 9,607,000
Barley	7,360,000
Wheat	6,726,000
Eggs	5,027,000
Palm fiber	2,012,000

Section B

State one reason for your answer in each of the above cases.

Section C

Check each of the following human activities that has shown a great improvement under French influence. Give a brief explanation of how each of these human activities has been furthered by French control.

- | | |
|--|--------------------------------|
| 1. Market gardening | 5. The gathering of cork |
| 2. Raising of peanuts | 6. Agriculture in general |
| 3. The sheep industry | 7. The transportation of goods |
| 4. Mining of iron ore and phosphate rock | 8. The raising of dates |

Section D

(A Point Picture Test)

- Examine Figure 1. Suggest where it was probably taken.
- Where in French Africa was Figure 2 taken?
- What in Figure 3 suggests why this industry is important here?
- Give a brief statement accounting for the kinds of homes and the types of trees in Figure 4.
- Name at least four cultural and natural items shown or suggested in Figure 5 that indicate that this picture was taken in the Sahara.
- Account for the arrangement of tents in Figure 6.
- What in Figure 7 suggests that this is a nomadic herd?
- What kind of work do you see in Figure 9?
- What are some of the things probably being transported by the caravan in Figure 9? Why do you think so?
- What kind of work is shown in Figure 10?
- What do we call a place similar to the one shown in Figure 12?
- How is it possible for such luxuriant vegetation to grow in the middle of the desert?

Section E

(Association Test)

Place in the space indicated the name of the colony to which the paragraph refers.

- | | | |
|---|---------------|-----------------------|
| 1. Mediterranean Colonies | 2. Madagascar | 3. French Somaliland |
| 4. The countries bordering on the Gulf of Guinea. | | |
| 5. French Equatorial Africa | | 6. French West Africa |

1. This part of Africa is of little importance commercially, owing in part to the large tracts of desert land. Its people either make a permanent home on the oasis or are nomadic herders. France is building a railroad that will extend through the region and connect the north and south possessions.

2. This small area is located on the eastern coast of Africa. It is of little importance, aside from its strategic position.

3. Owing in part to the hot, wet climate, the lack of good harbors, the distance from France, the low standard of living, and the small amount of trade, this region is of little value to France.

4. This section is the most valuable to France. Partly because of the mild rainy winters and the hot dry summers, the people raise wheat, barley, grapes, olives, figs, citrus fruits, and vegetables. It is favorably located for trade with European countries.

5. A large island east of Africa reminds us more of Asia than of Africa. The hot wet climate on the eastern coast makes possible the production of tropical products.

6. These countries, because of their hot, wet climate, are noted for the production of rubber, palm oil, and peanuts. The poor harbors and the unfavorable climate hamper their development.

V. References on French Africa

1. Allen, N. B., *Africa*, pp. 164-252.
2. Atwood and Thomas, *Nations Across the Seas*.
3. Barrows and Parker, *Southern Lands*, pp. 148-153; 189-203.
4. Branom and Ganey, *Our World*, pp. 291-293.
5. *Commerce Yearbook*, 1931, Vol. 2.
6. Fairgrieve and Young, *Human Geography by Grades*, Book 5, pp. 240-253; *The World*, pp. 173-183.
7. Gregory, *Africa*, pp. 90-105; 114-142; 262-268; 460-464.
8. McMurry and Parkins, *Advanced Geography*, pp. 460-464.
9. Packard and Sinnott, *Nations as Neighbors*, pp. 529-534; 544-545.
10. Stull and Hatch, *Our World Today*, pp. 101-123.

7. An Illustrative Eighth-Grade Unit: The Rubber Industry

The following illustrative unit is arranged for the eighth grade. It is a sub-unit taken from the unit on the import trade of the United States, and the development is planned for the attainment of an understanding of why the United States is dependent upon other regions for raw rubber, and how that dependence affects the huge rubber manufacturing industry in the United States. Rubber-goods manufacturing is one of the sixteen leading manufacturing industries in the United States.

I. The Rubber-Manufacturing Industry of the United States in Its World Relations

The activities of the 150,000 people in the United States who are making their living in the rubber-manufacturing industry are not only related to the natural and cultural conditions in and near Akron, Ohio; Trenton, New Jersey; and other rubber manufacturing centers, but also to conditions in Malaya, the East Indies, and Brazil, the regions supplying the raw rubber. Furthermore, the demand for rubber products by other regions, such as Latin America, is related to their needs and their ability to buy—factors dependent upon natural and cultural conditions there. Also, rubber manufacturing in the United States is related to conditions, natural and cultural, in the countries that are our competitors.

II. Motivation

The United States has a larger rubber-manufacturing industry than all other countries. Among the industries in the United States rubber manufacturing ranks high, with 141,121 wage earners, and with a value of \$1,255,414,112. The center of this industry is in northeastern Ohio, with Akron as the outstanding city. How are the lives and work of these 141,121 people related to natural conditions here in the United States, and elsewhere in the world?

III. Assimilation

1. What are the raw materials needed for rubber manufacturing? Which of these needs may be supplied locally? Which are supplied from elsewhere? What regions of the world are involved? What natural conditions help to explain why these regions are able to supply the necessary raw materials? By what routes and means are these supplies from elsewhere brought? Upon what other workers and what natural conditions, then, is the supplying of the needs of rubber manufacturers in the United States dependent? What are the characteristics of a typical rubber-factory layout?

(During the assimilation period graphs should be used to show the amounts and sources of raw rubber imported during different periods, and questions should be used to develop the significance of these graphs.)

2. The ability to accumulate, through coöperation with peoples of other regions, supplies at Akron and other rubber-manufacturing centers that enable those people to utilize resources at hand is not sufficient to explain the development of that industry at these places. These products would not be manufactured unless there was a demand for them.

What becomes of the rubber goods made? From the graph of imports of crude rubber, how much crude rubber is used in the United States? What industry or industries do you think responsible for the change noted on the graph about 1911-15? What are the regions in the United States that consume most of the rubber? Why? How much of our rubber products is sent abroad? From the statistical tables in the *Commerce Yearbook* note the growth in our rubber export trade, and also the types of products shipped

abroad. What are the foreign consuming regions? Suggest reasons for the export of our rubber goods to various regions. (The reasons would involve their needs and their ability to pay, both factors are based on natural conditions.) Then what new regions of the world do we find related to the rubber-manufacturing industry of the United States? In what regions of the world do we find strong competition? From what countries? Why? Note that some of our competitors buy from us. What may be the explanation? What would be the routes and means of distribution of our foreign trade in rubber goods? Upon what other workers and conditions, then, does distribution depend?

IV. Summary

1. In this unit, what new ways have you learned in which we depend on others and others on us?
2. Name various specific things that might happen in other lands that would affect this activity in ours.
3. How might changes in our rubber industry affect other lines of work in the United States and elsewhere? Show why.
4. Does our rubber industry help in any measure to explain our standing among powers? If so, how?

V. References

The most important reference is the latest *Commerce Yearbook* in which may be found statistical tables and a discussion of rubber manufacturing. Other references are added.

CHAPTER XVIII

GEOGRAPHY IN THE SENIOR HIGH SCHOOL¹

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I. GENERAL FEATURES OF THE PROPOSED PROGRAM

The program for geography in the senior high school herein proposed is directed toward orienting the student still further in the world that forms the setting for his life and work. It is a complex world with which the young citizen is trying to harmonize his activities and his habits of thought. Economic and political responsibilities await him at maturity, and geography at secondary school levels has its distinctive contribution to make in giving him the perspective necessary for meeting such of these responsibilities as pertain to the control or utilization of earth resources.

The sequence proposed for developing a useful series of orienting concepts embraces: (1) commercial, or economic, geography, aiming for orientation in the world of commerce and industry, and (2) an introduction to political geography, contributing to orientation in the world of political affairs and political powers. Content suitable for secondary-school use is ample for a year's work in each of these two fields, but a careful selection of material will make it possible to organize worthwhile semester courses where this procedure seems advisable.²

¹ Sections I, II, and III of this chapter are contributed by Miss Foster; Section IV by Miss Calloway. As with the other curricular programs, this material has been carefully examined by the Yearbook Committee, changes suggested, and modifications made. The material as here presented is acceptable to the Committee.—*A. E. P.*

² With some adjustments the second course may be organized so as to be presented quite independent of the first, the pupils relying upon the major understandings acquired in the elementary and junior high schools, strengthened by a review and by advanced work. Such a modified course could hardly be undertaken in less than a year.—*A. E. P.*

The suggested plan provides for progression, building upon the work of the elementary and junior high schools. This is accomplished through classification and gradation of content. Each course focuses attention on the geographic interpretation of a particular component of world pattern, commercial or political. This arrangement is facilitated by the fact that an initial concept of each pattern has been developed in the work below the senior high school. In the complexity of the relationships employed in interpreting world pattern, commercial geography surpasses that phase of geography studied in the junior high school and, in turn, is surpassed by political geography.

The plan here outlined reflects the continued evolution of a subject that, as an educational instrument, has responded repeatedly, though tardily at times, to changing conditions.

Some of the conditions calling for a readjustment of geography-teaching in the secondary school are as follows: (1) Geography, originally a university and later a secondary-school subject, has expanded into the elementary school, and the pupil there gains much of the information that formerly the university and the secondary school alone were prepared to give. (2) The atlas, the railway guide, and the encyclopedia now provide for the layman ready access to locational and descriptive facts, thereby eliminating the need for memorizing a great mass of such information. (3) General science is assuming responsibility for the interpretation of many familiar natural phenomena, thus taking away another traditional duty from geography. These changes, far from leaving geography without content, really emancipate the subject from the necessity for building up numerous subordinate concepts, and thus prepare the way for effective concentration on the present main objective.

II. A COURSE IN COMMERCIAL, OR ECONOMIC, GEOGRAPHY¹

1. The Social Import of Commercial, or Economic, Geography

The complexity of the modern world calls for geographic orientation as insistently as empire-building called for 'sailor geography' in the seventeenth century. We live in a commercial age, and a knowledge

¹ As indicated in the paragraphs that follow, the writer has in mind a geographical study of the production, movement, and use of the major commercial products. The title 'commercial or economic geography' is used because common usage employs the two terms 'commercial geography' and 'economic geography' to designate practically the same content.

of the local environment no longer suffices. Few of us produce the commodities needed to satisfy our wants. Instead, the major task of the individual is to produce goods or services for sale, and he purchases his food, his clothing, and his amusements. The existing economic order places necessities and luxuries within his reach by maintaining a vast movement of commodities over the face of the earth. To the uninitiated, the commercial pattern is a maze of meaningless lines, but in reality every line is full of meaning. Major trunk lines, as they extend across seas and continents, designate with unfailing exactness the powerful regions of the modern world; branch lines stretch out toward the world's productive areas; the roots of the commercial organism are sunk deep in the earth, drawing sustenance from the forces and materials of the earth itself, whose control and utilization constitute a fundamental problem of the human race. To orient the individual in this world of commerce and industry is one of the basic responsibilities of geography in the secondary school. At the same time, the secondary-school phase of the subject shares with geography at other levels of learning the responsibility for building up a comprehension of man's alliance with nature in winning a living from the earth.

2. The Objectives of Commercial, or Economic, Geography

The generalized concept that forms the major objective of commercial, or economic, geography embraces *a mental image of the salient features of the world's commercial pattern, rationalized by an understanding of how these features are related to the world's occupational pattern and to the underlying pattern of natural resources and conditions.*

This concept, or understanding, may be expressed as follows: The commercial regions of the world are bound together by trade lines focusing on Western Europe and Eastern United States, and commodity movements along these trade lines reflect the utilization in each region of the special natural resources with which the region is endowed. The attainment of this major world-understanding has large social import, for a satisfying individual performance is favored by an understanding that orients the complete world structure. Such a generalization, if it is to serve as a useful working concept, must be supported by an adequate number of subordinate concepts that will throw into relief the great commercial highways, the major commodity

movements, and the principal commercial regions. Each subordinate concept must be strengthened by rationalization, leading to a recognition of the particular types of *alliance with nature* that underlie commercial success in each major region and in each major branch of trade. The supporting concepts take the form of world generalizations, growing out of conclusions reached in specific case studies. The following list suggests the nature of these generalizations:

1. An understanding of the relation of the major commodity movements to world trade routes, to the major producing regions, and to the major consuming regions.
2. An initial understanding of the relation of the world's transportation pattern to the configuration of land areas, to great-circle distances, to air currents, and to the major commercial regions.
3. An initial understanding of the growth and location of commercial centers as related to the commercial industries of the surrounding area, to position in a route pattern, and to qualities of the immediate site.
4. An acquaintance with the general nature of the trade of each major commercial region and an understanding of how the trade is related through productive industries to the natural environment.
5. A recognition of the regional grouping of countries or parts of countries on the basis of contiguous location, similarity in methods of utilizing natural resources, and general direction of trade movement.
6. A recognition of the large and diversified trade of the major commercial regions as reflecting variety and abundance of natural resources and human initiative in capitalizing these resources.
7. An initial understanding of the limitations imposed on commercial output by unfavorable natural conditions, such as aridity, ruggedness, poverty in mineral resources, or shortness of frost-free season.

3. Organization of Content of Commercial Geography for Teaching

The organization suggested for the structure of the basic course is that of *interpreting the major commercial regions of the world through their major commercial activities*. This procedure combines the commodity and the regional modes of attack and has certain definite advantages over each. It permits a high degree of concreteness, since industries are studied in their regional setting and trade on its actual route. Thus a grasp of principles grows out of experience with specific cases. The plan of organization tends to develop a sense of proportion, since it throws emphasis on major regions and major lines of trade, while recognizing those of lesser magnitude in their relation as competitors. It leads to a recognition of the regional grouping of countries

or parts of countries, thereby furnishing a concept of high value for systematizing knowledge about areas. It permits the student to use familiar ideas in developing new concepts, for facts and understandings gained in earlier years concerning countries and occupations take on new meaning when applied in the interpretation of the commercial pattern.

Under the regional-commodity scheme of organization, each commodity study serves a dual purpose, contributing an element of world pattern, and at the same time serving as a key to unlock the geography of a commercial region. This statement may be clarified by examining Chart I, which analyzes a concrete case. World trade in raw wool is selected for the table because a full analytical treatment of this topic does not appear in current textbooks for the high school. The purpose here is to illustrate the organization of a unit, the material for which must come largely from encyclopedias, magazine articles, and supplementary readers. Obviously, units of this type require much more preliminary work on the part of the teacher than do units dealing with subjects treated adequately in the textbooks available for class use. The study of world trade in raw wool logically centers about the trade between Australia and Western Europe, for this trade constitutes the largest single movement of raw wool in the world. Moreover, the wool trade forms a convenient key to the geography of Australia, since wool is Australia's principal commercial product, accounting for nearly half the total value of Australian exports. The movement from Australia to Western Europe dominates the world pattern of the wool trade, pointing out the major regions concerned. At its source, the trade line branches repeatedly and is bound to the earth by many ties, such as the utilization of native vegetation, livestock-breeding for the purpose of adapting the flocks to local conditions, campaigns against herbivorous wild animals, and the restriction of the grazing area by unfavorable conditions in neighboring territory. At its destination, also, the trade line branches, reaching all the important manufacturing countries of Western Europe. There the geography of consumption involves such relations as requirements for comfort in a region having severe winters, the utilization of power resources, and the capitalization of a favorable position for trade. The geography of transportation, as discovered in a study of the trade line itself, includes the relation of the route to great-circle distance, to the configuration of land bodies, and to bordering productive areas. Branch and competing lines are

(Analysis of content for a unit of learning)	
WORLD PATTERN OF RAW-WOOL TRADE	INTERPRETATION OF PATTERN
WORLD PATTERN OF COMMODITY MOVEMENT Main trunk movement of raw wool Western Europe the principal destination Australia the principal source Branches leaving the main stream Movement to United States Movement to Japan Competing movements of raw wool Movement from La Plata Region Movement from South Africa Movement from New Zealand Prominence of Suez Route in raw-wool trade	INTERPRETATION OF WORLD PATTERN Western Europe as an importing region Statistical evidence of leadership in wool import Reasons for large volume of import Leadership in manufacturing Major uses for wool within region Export trade in woolen manufactures Advantages in power resources, position, experience Excess of demand over production in region Position of wool-importing ports with reference to manufacturing districts and ocean routes Competition offered by other buyers of raw wool Australia as a source of export wool Evidence of leadership in quantity and quality Conditions favoring leadership in raw-wool trade Relative extent of area suitable for grazing Absence of competing demands for the land Specialization in wool rather than mutton Emphasis on less readily perishable product in area remote from principal markets Extent of grazing area remote from coast Suez Route as principal highway for raw-wool movement Relation to major regions concerned in trade. Distance as compared with alternative routes Frequent services favoring regular deliveries to buyers Opportunity for business at intervening ports
REGIONAL DESIGN OF AUSTRALIAN WOOL INDUSTRY Pattern of grazing area in Australia General spread of grazing	INTERPRETATION OF REGIONAL DESIGN Relation of grazing pattern to favorable conditions Extent of area with native vegetation suitable for forage Relation of native vegetation to rainfall Supply of water for flocks Absence of diseases affecting flocks in more humid areas Advantages possessed by areas of special concentration

<p>Comparison of eastern and western halves of continent</p> <p>Absence of sheep from interior</p> <p>Absence from northern coast area</p> <p>Areas of special concentration</p> <p>Position in southeastern quarter</p> <p>Position back from coast</p> <p>Flow of wool within Australia</p> <p>Principal gateways for export wool</p> <p>Transportation pattern</p> <p>Navigable rivers</p> <p>Road pattern</p> <p>Principal collecting centers at foci of transportation pattern</p> <p>Related commodity movements</p> <p>Sheep for slaughter for frozen-meat trade</p> <p>Sheep skins</p> <p>Rabbit skins</p> <p>Supplies for use of sheep industry</p>	<p>Relation of grazing pattern to unfavorable conditions</p> <p>Conditions limiting expansion of grazing area</p> <p>Toward arid interior</p> <p>Toward humid Southeast</p> <p>Toward tropical North</p> <p>Conditions limiting density of stock on ranges and overcoming natural handicaps</p> <p>Technique employed for capitalizing advantages and overcoming</p> <p>Combating remoteness by specializing in high-grade wool</p> <p>Introduction of merino after discouraging outlook in early days of settlement</p> <p>Improvement of flocks by later importations</p> <p>Breeding for quantity and quality of wool</p> <p>Areal expansion of industry</p> <p>Into pioneer areas</p> <p>Organization of large ranch units, or 'stations'</p> <p>Labor-saving practices in feeding</p> <p>Labor-saving by developing special sheep dogs</p> <p>Development of sub-breeds of sheep adapted to natural conditions of the various sections</p> <p>Into wheat area</p> <p>Modification of feeding practices</p> <p>Adoption of dual-purpose sheep for wool and mutton</p> <p>Search for ways to minimize loss from drought</p> <p>Campaign against herbivorous wild animals</p> <p>Shearing practices adapted to pioneer shortage of labor</p> <p>Use of power-driven shearing machinery</p> <p>Progression of shearing season latitudinally, thus permitting work by itinerant bands of men</p> <p>Suiting transportation to local conditions</p> <p>Baling at shearing stations reduces bulk</p> <p>Washing at remote stations in Queensland reduces weight</p> <p>Types of carrier employed from ranges to railway</p> <p>Motor truck, bullocks, horses in coastal belt</p> <p>River barge from areas accessible to Murray and its tributaries</p> <p>Camels from areas on desert border of interior</p>
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sketched in to give balance, revealing the La Plata countries and South Africa as competitors of Australia in selling raw wool, while the United States and Japan take their places as competing buyers, bidding against the manufacturing countries of Western Europe for the world's annual wool clip.

Through a series of regional-commodity studies, providing experiences with specific cases, the way is prepared for these generalized concepts: *world commerce depends upon industries that utilize the natural resources of regions; regions compete with one another in trade; in the industries whereby he wins a living from the earth, man utilizes natural resources, modifies his technique to suit local conditions, and enters into conflict with elements of the natural environment that thwart his plans.*

The organization of a unit in commercial geography involves the analysis of content from both the geographical and the educational points of view. The nature of this two-fold analysis is illustrated by Charts I and II, where the analysis was undertaken in preparation for the planning of an individual unit. Chart I represents an analysis made from the geographical point of view, outstanding features of the commercial pattern being paired with data of an interpretive nature. Chart II represents the educational phase of the same unit, and shows in particular the students' participation in the work. In the first column of Chart II are listed a few mental acquisitions that it is hoped the student will make; the items of the second column represent raw material to be used in making the acquisitions; the third column indicates tools suitable for use in each case. These charts are merely suggestive; neither of them is a completed analysis.

The analysis of content having been completed, it remains to prepare teaching plans that will secure motivation, guidance in study, and activities that will secure permanence of acquisition. The nature of the motivating problem will determine the inclusion or rejection of items listed in the preliminary tabulation.

The selection of a series of regional-commodity studies demands the same attention to scientific relations and educational utility as does the organization of any unit for teaching. Clearly, it is impracticable to include in a high-school course the interpretation of all regions and all branches of trade. A satisfactory series of regional studies will provide for the interpretation of both the major commodity movements and the major commercial regions; and each region, in general, will

CHART II.—ANALYSIS OF EDUCATIONAL PHASE OF A UNIT ON THE WOOL TRADE AND INDUSTRY OF AUSTRALIA

Mental Acquisitions	Specific Material	Activities Suitable for Making the Acquisitions
Visualization of world pattern of wool trade	General direction of raw-wool movement Australian supremacy in production	Comparison of northern and southern hemispheres in wool export and wool import—graphic or map expression, countries grouped by hemispheres List of typical items in Australian trade with Britain, to be classified into northbound and southbound cargoes
Interpretation of route pattern	Northward trend of wool movement Dominance of Suez Route in wool trade	Discussion—Comparison of northern and southern hemispheres in production of wool; in total population; in export of woollen manufactures Discussion—Comparison of Suez Route with alternative routes in terms of distance, regularity of services, opportunity for completing or discharging cargo at intervening points
Visualization of regional design	Pattern of grazing area Flow of wool within region	Map study—Facts gleaned from maps translated into description or Map expression—Facts gleaned from descriptive or statistical data translated into map symbols
Interpretation of regional design	General spread of grazing area Gradation of density of stock on ranges	Map comparisons (<i>e.g.</i> , with tracing paper) to discover coincidence Of grazing pattern with pattern of natural features, such as vegetation types, rainfall, temperature Of grazing pattern with pattern of cultural features, such as transportation net, crop area
Interpretation of regional technique	Wool sales in October-November Latitudinal migration of shearing season	Graphic expression—to discover time relations Of wool sales to shearing season in different sections Of beginning of shearing season to weather phenomena

Challenging facts suitable for motivation:

Western Europe consumes about three-fourths of all the raw wool entering world trade.

Australia produces about a third of the world's exports of raw wool.

The estimated value of Australia's export wool in a recent year averaged \$213 per ton, while the estimated value of all wool imported into the United States in the same year averaged \$165 per ton.

be interpreted through its principal commercial industry. These three bases can be determined statistically, but there are other considerations that demand the exercise of judgment strengthened by training in both geography and education. In practice, it is necessary at times to reject the guidance of statistics in order to accomplish the educational purpose. Thus it happens in some cases (the La Plata Region, for example) that a region has several commercial products of approximately the same value, and it is necessary to determine which product will make the best vehicle for interpreting the region. In other cases (for example, the East Indian Region) a commercial region is composed of detached areas, each making a distinctive contribution to the stream of diversified products by which the region is represented in world trade. In still other cases, the major export from two or more regions is the same commodity. Decision is influenced also by the desire to acquaint the students with the major types of culture that contribute to world trade and with the major types of natural environment in which commercial production takes place. The commercial interests of the country and of the local community also may have some weight. Thus the list of studies is made up in the light of acquaintance with the general field of commercial or economic geography and with the educational objective in view.

The scope of the individual units also involves consideration from two points of view. Probably from thirty to forty regional-commodity studies will be found necessary to accomplish the major aim of commercial geography, but the experience of the teacher, the traditions of the school, and the maturity of the class will determine whether it is better to treat each of these studies as a unit or to group them into larger units. The unit understandings will differ in scope and concreteness under the two procedures. For example, the branch of trade analyzed in Charts I and II may be handled as a unit and lead to generalized understandings regarding a particular trade pattern. Such generalizations may be stated as follows:

The principal world movement of raw wool leads from Australia, via the Suez Route, to Western Europe, with a branch to the United States. Competing streams arise in the La Plata Region and South Africa. In building up the wool trade of Australia, settlers from the Northern Hemisphere have occupied a vast semi-arid area and made it serve human needs. In its progress to first place as a wool-exporting country, Australia has faced the disadvantage of greater remoteness as compared with its principal Southern Hemisphere competitors, but it has the advantage of a larger area with native

vegetation suitable for pasture. Australian people interested in wool-production have been successful in discovering a technique that enables them to gain preference in world markets, to secure a large output at relatively low cost, and to obtain satisfactory results from the grazing industry in sections differing widely in natural environment.

Or, with an experienced teacher and a particularly capable class, the wool industry of Australia might be part of a larger unit made up of several regional-commodity studies.

4. Associated Outcomes of Commercial Geography:

Abilities, Habits, and Attitudes

As an instrument of education, commercial, or economic, geography is capable of making permanent contribution to the individual's preparation for sharing the responsibilities and the satisfactions of living in the world of man and nature. It shares with other subjects the responsibility for some phases of the students' development, but certain abilities, habits, and attitudes constitute a distinctive product of experiences in the geography of world commerce. The development within the high-school years of these personal qualities that are based in part on earlier geographic learnings. This represents the fruiting of a plant whose roots reach downward to the elementary school. Examples of such peculiarly geographic outcomes are listed herewith:

1. A recognition of world commerce as taking advantage of contrasts in the natural environment of regions.
2. A recognition of the interdependence of commodity movements.
3. An understanding of the fact that the interdependence of peoples involves both coöperation and competition.
4. An attitude of fairness toward the regions that compete with the United States in world trade.
5. The habit of thinking of countries in their regional setting.
6. A recognition of the fact that manufacturing industries depend upon one another as well as upon industries that directly utilize natural resources.
7. Recognition of the fact that latitude of choice in man's commercial activities depends upon the favorableness of the natural environment in the region concerned.
8. A tendency to verify or refute generalized statements about commercial rank by checking them against reliable sources.
9. A knowledge of the general kinds of statistical data concerning production and trade offered by each of the following standard sources: *Department of Agriculture Yearbook*, *Commerce Yearbook* (U. S. Bureau of Foreign and Domestic Commerce), *Statistical Abstract of the United States*,

Foreign Commerce and Navigation of the United States, and Mineral Resources of the United States.

10. Facility in gleaning from statistical tables the salient facts bearing upon a problem regarding commercial pattern.
11. A recognition of the fact that many conditions indicated by statistical tables change from year to year.
12. Facility in using a map index giving location in terms of latitude and longitude.
13. Ability to use pictures as evidence for or against a hypothesis regarding technique in utilizing the resources of regions.
14. Ability to read from surface cross sections simple relationships of cultural features to land forms.
15. Ability to read from structural cross sections simple relationships of human activities to underground conditions.
16. Ability to read and construct graphs of a somewhat more complex nature than those employed in the junior-high-school work, such as those comparing the time distribution of two or more climatic phenomena, those showing time coincidences between human activities and climatic phenomena, and those comparing the trend of two or more lines of trade.
17. Ability to translate into descriptive statements the information regarding commercial pattern shown on maps.
18. Ability to translate descriptive or statistical statements regarding commercial pattern into map symbols.
19. Ability to read simple facts of slope, altitude, and the location of cultural features from topographic maps.

III. AN INTRODUCTORY COURSE IN POLITICAL GEOGRAPHY

1. Relation to the Course in Commercial Geography

This course may be ranked as 'advanced' because of the nature of the generalizations sought.¹ Its generalizations are built on relationships to the natural environment less direct and less concrete than those involved in the geography of world commerce. The political pattern derives much of its significance from its relation to the commercial pattern. Political activities are further removed from direct contact with the earth than are commercial activities, and their interpretation involves a longer chain of relationships. Moreover, the relationships involved are relatively abstract in their nature, for a political activity may be merely an expression of authority that operates by stimulating, directing, or restricting the utilization of natural resources by individuals. Thus the attainment of the major objective of political

¹See Chairman's comment, page 287, second footnote.

geography is facilitated by a mastery of the fundamental understanding involved in the study of the geography of world commerce as just outlined.

2. The Social Import of Political Geography

The growing interdependence of peoples calls for an enlightened attitude of world citizenship. No nation lives unto itself alone. Each step in linking regions through rapid communication emphasizes anew the vital need for a world point of view in managing the material heritage of the human race. Nations control land areas, together with the natural resources contained therein, but such holdings owe their value in part to their regional setting, and a wise national policy embodies national loyalty tempered by international understanding. Geography has its peculiar contribution to make toward the perspective necessary for balancing national and international interests. Thus the demand for political geography as a feature of training for citizenship in a republic is logical.

3. The Objectives of Political Geography

The major objective of political geography in the secondary school is an understanding of relationships that tie international political problems to the physical earth. In many cases the motive for governmental acts reaches through the commercial interests of the citizenry to earth resources and conditions. The attainment of the major objective of political geography in the high school will broaden the pupil's horizon by revealing the coöperative effort involved in the age-long struggle of mankind to occupy and control the earth. Governmental participation, ordinarily inconspicuous, becomes apparent at times of crises. Many of the resulting problems rank as 'political' because they are beyond the powers of the individual and require concerted national action. Orientation in the world of political affairs is favored by an acquaintance with problems of this type and also with problems of such scope as to involve international coincidence or clash of interests and entail international coöperation or conflict; *e.g.*, the proposed improvement of the St. Lawrence Waterway and Japan's recent activities in Manchuria.

The major objective of political geography in the high school resolves itself into specific objectives, the nature of which is suggested by the following list:

1. A recognition of the world's political pattern as an administrative apportionment of the earth's land area and its resources.
2. An understanding of the fact that under modern conditions political prestige is furthered by a large population, high rank in manufacturing, and leadership in commerce, these features depending upon the utilization of natural resources in the areas controlled.
3. A recognition of the fact that nations value territorial holdings mainly on account of (a) their suitability for the expansion of the home population, (b) the opportunities they offer for commerce, and (c) their strategic location with reference to the control of routes and areas.
4. An understanding of the fact that governments have an administrative function in stimulating or directing the commercial utilization of natural resources by individuals in the home state and in colonial territory.
5. A recognition of the fact that progress in industry calls for repeated readjustment of technique in utilizing natural resources, and that certain governmental activities represent coöperative experimentation in making such readjustments.
6. A realization of the fact that the widespread commercial activities of the modern world entail frequent overlapping or clash of interests among the nations.
7. A habit of looking at both sides of political problems and an attitude of fairness to both parties involved.
8. Ability to follow understandingly a geographical analysis of political problems involving the commercial utilization of natural resources or features.
9. A realization of the necessity for international coöperation in utilizing natural resources or features having more than local significance.
10. A permanent interest in current political activities and problems that have to do with the utilization of natural resources.

4. Organization for Teaching

Skill in both the geographical and educational phases of the subject is essential in planning a course to facilitate the attainment of the objectives just named. A successful scheme of organization will provide for a considerable number of case studies, from the findings of which the desired understandings will emerge as generalizations. The nature of the objectives implies a need for these three general types of experiences:

1. An analysis of the land holdings of each major nation, the analysis being based on the utility of areas for (a) support of population, (b) opportunity for commerce, and (c) strategy of location, thus providing experiences in evaluating land areas as a basis for political prestige. This type of activity capitalizes the work done in earlier geography courses, for it will mean, to a considerable extent, the reassembling of familiar

facts in order to use them in new situations for the development of new understandings.

2. An analysis of selected governmental functions and policies in order to discover their effect, actual or intended, in stimulating or directing the utilization of the nation's land holdings. This type of investigation provides for experiences in tracing typical chains of relationships from governmental motive through commercial and other activities to the earth.
3. An analysis of a selected group of unsolved political problems (including both domestic and international problems) related to the control or utilization of areas and earth resources. Activities of this type provide further opportunity for tracing the complex threads of relationship from governmental authority to the materials of the earth. They also provide favorable conditions for the growth of a permanent interest in current world affairs and a habit of wide reading. Experiences gained in analyzing problems of some types will lead toward a recognition of the need for constant watchfulness and resourcefulness in order that the industries of a nation may make successful readjustment to changes brought about by world progress, together with an understanding of governmental participation in such readjustments through research and experimentation. Experiences with other types of problems will lead toward a recognition of the international importance of certain earth features and the vital need for international coöperation in matters of common interest.

Experiences such as these have high citizenship value, in that they form one type of background for understanding new policies adopted by the government and for analyzing new problems when they arise. Such experiences contribute to an attitude of world citizenship by affording opportunity for looking at international affairs from the point of view of various nations.

The planning of a course in political geography admits of several organizing themes, among which are (1) the interpretation of political areas as features of the world pattern, (2) a consideration of governmental policies and agencies concerned with the administration of the national resources, and (3) the analysis of representative political problems related to the natural environment. In any case, areal divisions, governmental policies, and political problems will enter into the organizing plan. It seems most convenient to group these three types of considerations into units dealing with individual nations and involving a study of typical political problems that confront a given nation and of policies that the nation has adopted.

This plan of organization is in general accord with the course recently outlined by a committee of the National Council of Geography

Teachers.¹ Under the title "Elective Course in High School Geography," this committee outlined a course in the *Political Geography of the Major Nations*. The committee plan provides for experiences of numerous types. The list of countries suggested for study embraces influential manufacturing and commercial nations holding colonial territory, small independent nations, colonies of European powers, fragments of dismembered empires, and countries with ancient civilizations and rigid traditions. Among the topics listed for study under the various countries are those suggesting such lines of investigation as the following: (1) the geography of national expansion, (2) political aspects of commercial relations between nations and their colonies, (3) changing political status of countries associated with progress in using earth forces for mechanical power, (4) the political effects of commercial rivalry among countries, (5) the strategic value of particular colonial areas, and (6) the relation between the political status of certain small independent countries and their strategic position on important routes. An experiment in teaching units based on such a course is next described.

IV. AN EXPERIMENT IN TEACHING POLITICAL GEOGRAPHY IN THE SENIOR HIGH SCHOOL²

This section of the chapter describes a plan for conducting an experiment in the teaching of political geography to secondary-school students who have finished one year's work in commercial geography. Although the experiment has not been completed, the plan to be followed is outlined in the belief that it may be of interest to others concerned with similar investigations. The experiment was suggested by the tentative course, mentioned earlier in this chapter, entitled 'Political Geography of the Major Nations,' which was developed by a committee of the National Council of Geography Teachers.

An early step in our experiment was the construction of an outline, based on this course—and equally tentative. The object of this step was to take advantage of all helpful suggestions made by the Committee of the National Council and to try to carry out the spirit of the committee's course while modifying it to suit the specific situation.

¹"An Elective Course in Senior High School Geography," *Professional Paper No. 2*. Published and distributed for the National Council of Geography Teachers by A. J. Nystrom & Co., 3333 Elston Avenue, Chicago, Illinois.

²This section of the chapter is contributed by Katharine L. Calloway.—A.E.P.

The past experiences of the young people making up the experimental class were taken into account, and their study habits and previous geographic training carefully considered.

It was felt that an introductory unit that would provide at the outset for specific activities on the part of the group was needed. The purposes of this unit were, first, to acquaint them, at once, not only with methods of work, but also with the meaning of the title of the course, and, second, to present concretely some of the evidences of the relative importance of various nations in world affairs, and some of the types of problems to be considered. This initial unit was worked out in detail, and the remainder of the proposed course merely outlined.

1. An Introductory Unit: The Meaning of 'Major Nations' and 'Political Problems'

The nations whose political problems are to receive chief emphasis in this course are the United States, Britain, France, Germany, Japan, Italy, Russia, and China. The following exercises bring out some facts that help to show why these countries may be considered 'major' nations.

Exercise 1. Rank in Area. Suppose an international conference were to be held, to which representatives from the independent countries of the world were to be sent on the basis of the areas of the lands over which the countries exercise political control. The areas of both homelands and colonial possessions (Commonwealths of British Empire not to be included) should be considered. Suppose each country sends one representative for every 1,000,000 square miles of territory. What would be the size of the delegation from each country? (The instructor in this preliminary exercise should supply in tabular form all the data needed as to area, population, and the like. Pupils might be asked to verify the data after the exercises have been completed.) What two countries in the list would be without representation? What countries not in the list might have representation based on area?

It is seen, therefore, that these countries are called 'major' not on the single basis of the amount of land they control. It is interesting, however, to discover how large a part of the land surface of the earth is under the political control of six of the nations listed for our study. The total land area of the world is about 52,000,000 square miles. About what part of this do these six great nations, United States, France, Germany, Russia, Italy, and Japan, control? This fact suggests to us *one* of the reasons why these nations are looked upon as 'major.'

Exercise 2. Rank in Population. Suppose that population of the homeland, instead of area controlled, were the basis for representation, and that

one representative were sent for every 40,000,000 people. (The instructor supplies the population data, as in Exercise 1.)

1. Which countries could send only one representative on this basis? Which two countries could send three each? Which one could send eleven? How does this list compare with the list of those to be studied? What three countries could be included on this basis that could not be included on the area basis? This exercise shows another way in which the countries in our list are 'major.'

Many more bases might be used, such as the amount of tonnage of merchant ships under each flag, or the production of pig iron or the coal mined, which are indices of industrial development. Great nations are judged also by the size of their navies. In general, the amount and quality of natural resources, which are one basis for economic strength, and the amount and 'quality of resources' in people, are to be considered in selecting nations that may be thought of as 'major.' Our list of eight countries is arbitrary, because there is no exact set of rankings a country must have to be included in the list. All those included, however, rank high enough in some of these respects to be thought of as 'major nations.'

Concluding Exercise. Make a table of the eight countries in the list and indicate the rank each one has on the various bases used.

2. Samples of Other Suggested Units of Study

In the political geography of the major nations we are concerned with discovering how the political activities of each are rooted similarly, to some extent, in natural conditions, and how nations take natural conditions into account in considering how to solve political problems. One should keep in mind these two points in the course work: (1) political activities or problems are those concerned with governmental action, and (2) political geography deals with the ways in which such problems and their solutions reflect the efforts of the people of a nation to make the most of their natural environment or to overcome some of its handicaps in order that their nation may survive and prosper.

Four units are shown here in bare outline.

I. Some Aspects of the Political Geography of the United States

Topics for Investigation by Class:

1. The development of a democratic type of government in the United States as related to occupancy of extensive, humid, fertile plans.

2. United States federal income as related to utilization of the nation's natural resources.

3. The geography of government regulation of industry and commerce in the United States.

4. The Consular Service, as an agent of international intercourse.
5. The Expansion Policy of the United States in relation to economic conditions based on natural resources.
6. Geographical bases for differences in the political status of the United States from those of other American republics.

II. Some Aspects of the Political Geography of Britain

- a. Geographical Bases for Rank as a Colonizing Power:
 1. An analysis of homeland conditions: industrial development and crowding population.
 2. An analysis of the British colonial pattern.
- b. Geographical Aspects of Recent British Political Problems:
 1. Unemployment and social legislation.
 2. Commercial relations of the Commonwealths of the British Empire.
 3. The Irish Problem.
 4. The Indian Problem.

III. Some Aspects of the Political Geography of France

- a. Political Problems of European France:
 1. National unity in relation to the economic divisions of the country.
 2. International consideration regarding conditions on French frontiers.
 3. National defense policy in relation to the character of national boundaries.
- b. Some geographical considerations involved in the political unity and the administration of the French colonial system:
 1. The question of suitability of colonial territory for expansion of French population.
 2. The relation of colonial trade to French industries.
 3. Conflicts with other powers arising from colonial expansion.

IV. Some Aspects of the Political Geography of Germany

- a. Political Pattern in Relation to Natural Environments:
 1. The geographic basis for the union of the German States, comprising contrasting areas for trade.
 2. An evaluation of present German boundaries with regard to their crossing of unit-economic areas and their natural characteristics for defense.
- b. Geographical Bases for Aggressive Prewar Foreign Trade Policy.

The topics just suggested for each major unit obviously in no way cover completely the possibilities for their development. Each of the other eight major countries selected as playing a prominent part in current world affairs has problems of a nature similar to the foregoing, yet those for each nation grow out of that nation's own environmental setting.

3. EXPECTED OUTCOMES

Outcomes expected from a study of this proposed course are:

1. Ability to trace the threads of relationship that in the present-day world connect political organizations, practices, and problems, through economic and commercial interests, to natural environmental conditions in all parts of the world involved.
2. Ability to use understandings of such relationships as one basis for personal judgment upon political issues and problems of local, national, and international importance, bearing upon the control, utilization, or conservation of natural resources.
3. Ability to gain effectively from maps, atlases, graphs, and statistical tables information concerning political, economic, and natural environmental factors, as an aid in gaining perspective for an opinion on political matters.
4. Ability to enrich the reading of history and current literature through an understanding of the interrelations of political, economic, and natural environmental conditions.
5. Partial understanding of the importance of politico-geographic interdependence among nations.
6. Appreciation of the importance of international coöperation in sharing, conserving, and utilizing natural resources, as a basis for world political stability and peace.
7. Open-mindedness toward the political biases of nations with different environmental backgrounds.
8. Desire to assist, where possible, in bettering political adjustments to conditions growing out of existing practices in utilizing the natural environment.

CHAPTER XIX

GEOGRAPHY IN THE JUNIOR COLLEGE

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I. THE GENERAL AIM OF THE JUNIOR COLLEGE

The significance of the junior-college movement in the United States is shown by the fact that thirty of the states recognized such institutions as "officially accredited" in 1930-31.¹ Among the remaining eighteen states, several recognize the legal status of existing junior colleges although official accreditation and listing have not been published. In view of the relative youthfulness of the movement one is tempted to wonder whether the junior college is an unwarranted exemplification of the democratic slogan "Education for the Masses" or is destined to become the 'peoples college' of the future? Will the traditional four-year college disappear, and its first two years be closely tied up with the high school into the local junior college, while the last two years become merged with the graduate college and all that it implies in the line of specialization and professional studies?

Regardless of what turn events may take, the junior college, representing the so-called 'underclassmen stage,' must find its place through the opportunities it provides for broad cultural studies. Specialization cannot be its field, nor should it be. The keynote of the junior-college curriculum should be the development of higher social ideals. If, through well-directed effort, the student is led to an appreciation of his own position in relation to the world about him, the function of the college will be well served.

II. ESSENTIALS IN THE CURRICULUM

Educators are generally agreed that an appreciation of the world in which we live is essential to good citizenship, but they are slow in

¹ Office of Education Bulletin (1930)—No. 19. Department of the Interior, Washington, D. C.

recognizing the place of geography in their plan. Yet if the junior college is to function as the college for the masses, its course must give emphasis to education for citizenship; as such it must deal with three fundamental lines of study, viz., (1) the natural sciences and mathematics for their methods of weighing evidence and reaching definite results, (2) the social studies for their emphasis on the development of human ideals and institutions, (3) the humanities, including language and literature, for their presentation of past and present cultural achievements. In this scheme of things biology and geography are fundamental because what we are and what we do are admittedly the results of heredity and environment. How may students be more effectively led into an appreciation of heredity than through the biological sciences? How may they be more effectively led into an appreciation of the significance of their surroundings than through geography, the subject that must place environment on the center of its stage with man as the principal actor?

III. PRESENT STATUS OF GEOGRAPHY IN THE JUNIOR COLLEGE

In order to determine the present status of geography in the junior colleges of the United States an inquiry was mailed to the principal of nearly every college named by the various states as on the accredited list. This inquiry presented the following questions:

1. a. Is geography offered in your college?
b. If so, is it a required subject or an elective?
2. Is American history a required or an elective subject?
3. Do you favor introduction of a year's work (3 hours per week) in geography for its value as fundamental to the social sciences as well as for its training for citizenship?
4. Which would you deem preferable from the standpoint of the general curriculum?
 - a. Principles of geography one semester followed by regional geography of the world one semester?
 - b. Fundamentals of economic geography one semester followed by economic geography of the United States one semester?

The inquiries were sent to 297 colleges and from them 154 reports were received. A few of the replies evaded one or more of the points. The distribution of answers was fortunate, inasmuch as 28 of the 30 states listed as having accredited junior colleges were represented in the returns. The results, as herewith tabulated, may therefore be con-

sidered as a representative cross-section of fact and opinion as it exists at the present time with reference to the points involved.

1. In response to the first question, 52 stated that some geography was offered, while 102 reported none given. On this basis we may say that geography of some sort is taught in one-third of the junior colleges of the country. It is, however, mostly on an elective basis, only 7 reporting it as a required course while 45 listed it as elective, in many cases only as a one-semester subject.

2. The situation in American history is almost the reverse. Only 13 colleges did not offer American history; 128 did offer it. It is more often an elective subject than is ordinarily supposed—93 reported it as elective, 35 as required. Comments made indicate, however, that nearly all students in the junior colleges carry some courses in American history. We thus have the anomalous situation wherein the great majority of students study the past of a country of whose present and of whose national environment they may be hopelessly ignorant.

3. To the third question, as to whether the introduction of a year's work in geography was favored, 122 responded favorably, 32 unfavorably. If this be a fair criterion of the prevalent sentiment, 78 percent of the junior colleges favor the introduction of geography into their curricula whereas only 33 percent of them are now offering it. This raises the query: Why is geography so slightly represented now? Is it due to lack of teachers or to lack of texts or courses that meet the implied demand?

4. The fourth question, dealing with suggested courses and sequences, was answered in 127 of the 154 returns. The division was nearly even; 60 favored a semester of principles followed by a semester of regional world geography, while 67 favored a semester of fundamentals of economic geography followed by a semester devoted to the geography of the United States. Of the 27 who did not take a stand on the question several expressed preference for a semester of principles followed by economic geography while a few favored fundamentals of economic geography to be followed by world studies.

IV. SUGGESTIONS FOR A PROGRAM

That on a poll of this sort nearly four-fifths of the junior-college principals favored introduction of at least a year of geography is clear evidence of the need of providing a constructive program at an early date. Great progress is being made in this direction. Geography,

although considered by many as mankind's oldest science and by some as the true 'Mother of Sciences,'¹ is nevertheless relatively young as a recognized subject in American colleges. At the beginning of the present century only twelve colleges and universities were offering courses in geography, and in them it was mostly physical geography taught under the wing of geology. Now geography is fully recognized in nearly every large university or college from New England to California and from Minnesota to Texas. In nearly every instance beginning courses are offered to relatively large numbers of students on the underclassman, or junior-college, level. From these sources a number of views have been published in various geographical and educational journals, and one of the professional papers of the National Council of Geography Teachers is devoted to the problem of the introductory course in college geography.²

If the introductory course is to serve a broad educational need, there seems no valid reason for any differentiation during the first half-year, regardless of whether the students are prospective teachers, business men, farmers, or lawyers. The uneven distribution of people over the face of the earth is the striking fact that challenges attention at the outset. In meeting this challenge, the student is immediately confronted with the two major phases of environment, the natural landscape and the social. Although he must bear in mind that social institutions, the creations of man himself, are vital elements of the stage of action upon which the human drama is played, he must focus his attention upon man in his relation to the natural environment. This necessitates inquiry into the climates of the world, their distribution, characteristics, and consequences; into the land forms, the distribution and characteristics of plains and rugged lands; into the distribution of natural resources, notably the most important mineral fuels, metallic ores, and fertilizer materials; into man's use of the land for agricultural and industrial pursuits; and into the great highways of the world—by land, sea, and air—along which man moves, trades, and communicates with his fellows. In this inquiry emphasis must be placed on the three fundamentals, *fact*, *cause*, and *consequence*. Put

¹ Renner, G. T., Jr. "The introductory geography course in science." *Jour. of Geography*, Jan., 1931.

² *The Introductory College Course in Geography*. Professional Paper No. 3, National Council of Geography Teachers, Professor E. E. Lackey, Secretary, University of Nebraska, Lincoln, Nebraska.

less elegantly, the thesis of study may be stated as *what, where and why*, and *what of it*.

The introductory semester in college geography should be one wherein broad principles are developed and emphasized through concise illustrations drawn from all parts of the world. Thus not only is a good foundation laid for further work, but the student is also at once introduced to the significance of environment as a fundamental factor to be considered with respect to his own place in the social order. He is led to realize the universality of man's relation to his surroundings and thus to appreciate the need of "accurate localization and explanation of the facts which express man's relation to his environment."¹

During the second half-year some colleges will prefer to devote the time to a careful survey of the regional geography of the continents, while others will prefer to study more intensely North America or perhaps the United States. In the study of the continents the broad physical features, relief and climate, should be boldly painted, but unless specific emphasis is given to resources and countries, the value of the work may be questioned. In a regional geography of the world students should be led to understand the bases of the larger problems that confront people in the various lands; in order to develop this understanding, relationships of terrain, resources, and people must be made specific for given countries.

Inasmuch as the mission of the junior college should be the development of intelligent citizenry, a half-year may well be devoted to a careful study of the home country. Whether this should be known as economic or regional geography of the United States does not seem of major moment. In such a study the natural environment of the various regions of the country would have to be studied; the resources, industries, products, and trade should all be included in the picture. But most important of all in such a study should be the emphasis on the diversity of resources, activities, and products of the United States; the varied interests of the people and the dependence of every section upon other sections. In this way the foundation for mutual understanding among all people of the country will be laid and an effective step taken to eliminate sectional feelings and to arouse an understand-

¹ Taylor, Griffith. "The margins of geography." *The American Schoolmaster*, February, 1932.

ing that true progress cannot be attained by any section at the expense of any other.

Inasmuch as the center of interest in geographic study is quite naturally the home continent or country, it is logical to place a semester's emphasis upon it, even making such study the climax of the course. Care should be taken, however, to avoid making the course chauvinistic, to avoid stimulating national selfishness under the guise of patriotism. In such a study full recognition should of course be given the wealth of natural resources and the productivity of agricultural lands. That progress has been the result of achievement by the hardy, energetic, and ambitious Europeans who left their established homes and ventured into the new lands across the sea, should be emphasized, not ignored. But even so, the course will fail of its greatest achievement if it does not bring out clearly the dependence of the United States, great as it is, upon other countries for many of the things we deem essential in our industrial life and even in our standards of living. Let it not be overlooked that we have practically no tin, nickel, manganese, rare metals, all absolutely necessary in our great steel industry to-day; that we depend on outside sources for vegetable oils for our finest soaps, cacao for our confections, tea and coffee for our beverages, rubber for our automobile tires. Thus may be taught, not only the interdependence of the regions of the United States, but also the interdependence of the nations of the world. Thus may be made clear that exchange of products is essential to well-being in the modern world, and that exchange of ideas is fully as important as exchange of commodities. Geography is the logical vehicle to carry these truths into the consciousness of young students. That development of intersectional and international understanding is essential to progress cannot be doubted, and this development can only be effected by means of the leaven spread by intelligent citizens, such as the junior-college students of to-day are expected to become on the morrow.¹

¹ For additional treatment of the general topic of this chapter see the study by H. K. Hutter of "The Status of Geography in the Liberal-Arts Colleges of the United States" included in Chapter XXXI.—A. E. P.

SECTION V
THE TECHNIQUE OF TEACHING GEOGRAPHY

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CHAPTER XX

METHOD IN GEOGRAPHY

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I. RECENT DEVELOPMENTS IN EDUCATION

The last half century has witnessed tremendous changes in the subject matter, the method, and the philosophy of education. This statement is so obvious a truism to anyone within the profession that one must justify the necessity for making it. In the present instance the fact is recalled to the mind of the reader because this chapter of the Yearbook is an attempt to indicate what these changes mean for the subject of geography and how in the future geography must adapt itself to keep pace with a changing and growing philosophy of education.

One may truthfully say that fifty years ago there was no true science of education. The method of quantitative measurement of phenomena was practically unknown in the field of education, and questions as to right or wrong methods of teaching were settled on the basis of authoritative statements by recognized professional leaders. The nature of the child's mind and the necessary conditions for its best growth, subjects which have interested leaders in thought from the earliest times, were matters for philosophical speculation or for unscientific observation rather than for exact measurement and sound weighing of evidence.

The science of education, then, is very young indeed, so that when one is at times disposed to be critical of the methods used by investigators or of the conclusions drawn from experimental work, he should remember this extreme youth of the scientific movement and also remember that action on the basis of some evidence, even though incomplete or perhaps partly erroneous, is likely to be better than action on the basis of no evidence at all.

II. TWO TYPES OF SCIENTIFIC EXPERIMENTS IN EDUCATION

One may distinguish two general types of scientific experiments in the field of education. The first type is concerned with the discovery of particular facts in a specific field, like the epoch-making penmanship scale made in 1911 by Thorndike that made possible a reasonably exact evaluation of a child's status in handwriting.

Hundreds of experiments in the measurement, the content, and the method of the school subjects have since been conducted. Great changes have been made as a result of these experiments, notably in the fields of spelling, of arithmetic, and of reading, but to a lesser extent in the field of geography. That is a perplexing and difficult field for scientific attack; for, as an elementary-school subject, it is much newer than the three R's, and its very youth makes for lack of agreement on aims, purposes, and subject matter. It is not the purpose of this chapter, however, to summarize the conclusions from these studies in geography. Rather we shall be concerned here with considering, for the field of geography, the meaning of the second type of educational experiments.

This second type has to do with general matters of teaching and learning in the school. It attempts to throw light on the general problems of method.

That this is a different problem from that of establishing particular techniques in individual subjects is evident if one considers an analogy from a somewhat different field of study from that of the elementary school.

Consider the problem of learning to play the violin and learning to play the piano. The position of the body of the player, the coördination of muscular systems, the use of hands and arms, the translation of musical notation into physical action by the musician; all are vastly different for the two instruments under discussion. Specific methods of teaching technique on one instrument will of necessity have little in common with the methods for the other. But the actual learning mechanism—the means of directing and coördinating hands, arms, eyes, and all the intricate muscular reactions of musical performance—is the same for both instruments. We do not teach the hands or the muscles; we teach the brain and the nervous system. Interest, effort, persistence, intelligence in understanding and carrying out instructions must all be enlisted to secure rapid progress with either instrument. Moreover the means for awakening and directing these forces are fundamentally the same. For example, good teachers of either violin or piano start very early in a pupil's career to give him simple melodies to play, in order to enlist his interest and to give him some measure of satisfaction with his

efforts. A pupil of either instrument is encouraged to hear great artists play it, so that he may be inspired to persist. Clarity of directions for practice is essential with either instrument in order that just the right reactions may receive drill. It is primarily the brain, not the eye or the hand or the muscles, which is being taught.

In the last few decades, much experimentation has been devoted to the discovery of the general laws that control learning on the part of children. The fields of biology, physiology, and psychology have all made their contributions; and perhaps most important of all, educational philosophy has been constantly attempting to interpret and to coördinate the findings of these different branches of science, and to weave them into a useful and intelligible body of principles of classroom method. It is our task in this chapter of the Yearbook to indicate the meaning of these principles of philosophy for the subject of geography.

III. TWO FUNDAMENTAL POSTULATES IN TEACHING

Modern education has two fundamental postulates which underly all its conclusions and the ramifications of which can be traced in all its principles of method. The first of these is that when one teaches a child anything, he teaches *the whole child*. It used to be thought possible to teach only one hypothetical faculty of the mind quite apart from other faculties and with little, if any, reference to the body of the child. We now know that this idea is quite false; we know that the nervous system is a vast, complicated network, with its center, to be sure, in the brain, but with all its parts throughout the entire body so intimately connected that the stimulation of any one tiny nerve fibre may be communicated to any, or indeed, all of the others. One individual stimulus, then, may result in very profound bodily and nervous reactions.

The second fundamental postulate of modern education is again a criticism of an older point of view. According to this older theory in education, the purpose of the school was primarily to prepare a child for later life. Childhood was a period during which the mind of the individual was to be trained in certain skills needed in later life, and stored with the knowledge that would be used in the period of adulthood. Whether the learner saw any use for the skills or any value or meaning of the knowledge was a matter of little, if any, concern to the educator.

Modern education sets itself squarely against this idea. In the first place, the 'cold storage idea of knowledge,' as it was characterized by Dewey, will not work. How many adults would care to retake, for example, those examinations in geography upon which they may have received good grades in the elementary school? In the second place, psychology has definitely established that forcing an individual to learn something for which he sees no value or use is a wasteful and ineffective way of teaching. In the third place this cold-storage theory denies to a child the right of true living now as a child; it forgets that school must consist of real life as well as of preparation for life; and it neglects the fact that "only life, full, rich, free and individual, prepares for life."

IV. SOME COROLLARIES TO THE POSTULATES

These, then, are the fundamental articles of the creed of the educational modernist. We must now consider more fully some of the corollaries of these convictions and see how they apply to the field of geography. These corollaries will be discussed as principles of method, but it must be fully understood that no one of them is a separate, discrete ideal unrelated to the others. They are so closely entwined with one another that they must be thought of as different points of emphasis rather than as separate principles.

1. Freedom

One of the most striking differences between the classrooms of a century ago and those of the progressive schools of today is the greater degree of freedom that is permitted to the pupils in the modern school. This is a direct result of the two basic principles we have stated. If the school is to be a medium for rich living today for the children, and if the energies of the whole child are to be enlisted in a healthful fashion, then it follows that naturalness and freedom from strain; frequent change of physical position; opportunity for classroom experimentation with real things; and the chance to discuss without undue restraint, either in committees or in a committee of the whole, matters of individual or general interest; all these must be characteristics of the modern classroom.

Especially helpful for the subject of geography is this newer body of theories regarding classroom discipline. Geography is a social science with large elements of an exact science. From the fact that

it is a social science arises the necessity for much discussion on the part of the learners. Every social science is in a constant state of flux because of the obvious fact of constant social change. This means that no mere memorization of facts as they are today can ever constitute a sound method for study of a social science. Children must be taught to become geographical thinkers, not mere rememberers.

Of course this does not mean at all that exact knowledge is unnecessary. Quite the contrary, for if facts are to be used in a valid train of thought, then they must be correct, otherwise the whole thought structure collapses. Children to-day as always must learn facts in their geography classes; but their use of the facts is different.

Following, then, the ideal of freedom in modern education as it works out in the field of geography, the modern geography classroom has become a forum for the discussion of vital problems. Under the skilled leadership of the teacher, the children, individually or by committees, present their points of view, substantiate them with facts gained in their study, and attempt to disprove opposing theories. The children talk freely and move naturally about the room if a source book is needed for proof of some moot point, if reference must be made to a wall map, chart, globe or model, or if a matter can best be explained through making a blackboard diagram. The atmosphere of the room is free and pleasant, and children feel little or no desire to misbehave, because all of their energies are otherwise engaged.

The same sort of discipline prevails during the study period. A good study period in geography is characterized by frequent reference to other authorities than the one textbook, and consultations between members of the class may be held in whispers or low tones.

Modern theory, then, in its concepts of classroom discipline, has opened the way to the possibility of a finer type of geography teaching than was ever possible under the rigidity of the old régime. One can truthfully say that the best sort of geography teaching can take place *only* under such conditions as have been found, through biological and psychological experimentation, to be healthful for growing children.

2. Concomitant Learning

The second important theory of modern education, the bearings of which we must consider for the subject of geography, centers in the principle of concomitant learning in every learning situation. A consideration of these concomitant, as well as of the immediate, learnings

is a corollary of the principle that the whole child is being educated in the school, and presents what Kilpatrick calls "the wider problem of method." He says:

Then we have two factors that together make up the wider problem of method. First is the fact that while the child is responding in a significant fashion for any length of time to any situation, he responds not singly, but variously, to the many different parts and aspects of the situation. What he learns by these varied responses I am calling 'simultaneous learnings.' The second is the fact that the teacher's way of handling any pupil-learning situation affects for good or ill the aggregate of these simultaneous learnings. They are all tied together; they must be considered together. . . . Any child during an educative experience learns not merely the thing he is supposed to be engaged in, say a grammar lesson, but is also at the same time learning well or ill a multitude of other things. Some of them may be: how he shall study, whether with diligence or the reverse; how he shall regard grammar, whether as an interesting study or no; how he shall feel toward his teacher, whether as a friend or helper or as a mere taskmaster; how he shall regard himself, whether as capable or not; whether he shall believe that it pays to try (in such matters as grammar); whether to form opinions for himself and to weigh arguments in connection; how he shall regard government, of all kinds, whether as alien to him and opposed to his best interests, a mere matter of opposed superior force, or as just and right, inherently demanded, and friendly to his true and proper interests.¹

This wider problem of method is peculiarly important in such a subject as geography. Geography is a study of relationships between human beings and physical and physiographical conditions. The progress of modern science with its attendant changes in industry and commerce is producing vast changes in the control that man exerts over his environment as well as in the peculiar values of certain types of environment for the uses of man. For example, on the one hand, the ocean no longer represents the serious barrier to communication that it did two centuries, or even one century ago; through better ships with more efficient means of locomotion, through cables and wireless, man controls this barrier to communication. Thus man secures a greater measure of control of his environment. On the other hand, the invention of the internal combustion engine, requiring for fuel the derivatives of petroleum, has revolutionized the values to man of cer-

¹ Kilpatrick, Wm. H. *Foundation of Method*, pp. 9 and 14.

tain parts of the earth where petroleum is found. Thus the importance of certain types of physiographic environments has changed.

With the on-rushing sweep of scientific progress, we may expect in the future still greater changes of the two types described above. Who would have the temerity to predict a hundred years or even ten years from now what possibilities may be realized either in man's control over his environment or in his utilization of hitherto unused forces latent in his physiographic environment?

All this means that the geographic truth of to-day may be the falsehood of to-morrow. We can be sure of the permanence of little that we teach in our geography classes to-day. This means that attitudes, interests, and purposes that are broader than facts are vitally important in our classrooms. Such results of teaching can be secured only through a serious attention to the wider problem of method.

3. Attitudes as an Outcome of Geographic Teaching

What are some of these attitudes that should be the result of a teacher's close attention to the wider problem of method in his classroom? To begin with it seems an inevitable conclusion that a deep, permanent interest is a *sine qua non* of good teaching of geography. Since one aim of the school is to train intelligent citizens and since the facts of geography are constantly changing, then it follows that only as a child develops an abiding and active interest in the subject that will ensure his being sensitive throughout his life to geographic changes and their results for him, for his country, and for the world as a whole, can he be said to have received good instruction in geography. If a teacher fails to instill into his pupils this abiding interest, no matter how good examinations they may pass in the facts of present-day geography, he has failed at the most vital point.

This means that the geography class must be a period when vivid and fascinating material is presented in a concrete and interesting way. No teacher who is not thrilled by the subject can hope to attain a high degree of skill in teaching it.

The second attitude that is the result of attention to the broader problem of method in geography classes is that of learning to expect changes and of welcoming them. The good student of geography watches world progress with breathless interest and readjusts his geographical thinking to embrace and assimilate world-wide changes. A child so trained recognizes that the good old ways of his fathers were

all very well for them, but that they will not do for him. His life becomes a progressive and thoughtful readjustment of his ideas and interests. Thus he tends to become a dynamic force in his political, economic, and social milieu, instead of a conservative die-hard, clinging to the outworn vestments of a former day.

The third attitude that the wider view of method strives to achieve in the geography classroom is that of sympathetic toleration and understanding. The teacher attempts to secure this attitude in two general ways. On the one hand, he never permits to go unchallenged statements that reveal a supercilious feeling of national superiority. On the other hand, he embraces every occasion to point out the industry or resourcefulness of another nation. He stresses the amazingly clever adaptations to their environment that have been made by other peoples; and when there is a real element of superiority in our country over another, he brings it out in discussion as a source of responsibility on our parts to others, rather than as a matter for nationalistic gloating.

We have mentioned three attitudes, the development of which should be of deep concern to any teacher of geography. The list is by no means exhaustive; many others may be found in this Yearbook. These three are simply illustrative of the need for everyone concerned in instruction in geography to recognize and plan for those elements of their work that are significant in "the wider problem of method."

V. A THIRD COROLLARY AND ITS APPLICATION TO GEOGRAPHY TEACHING

A third corollary of the two fundamental principles of modern educational method has to do with relationship of the various subjects of study in our schools. If we are educating the whole child, not merely one separate compartment of him, and if we are attempting to secure rich living for him to-day, then it follows that the hard-and-fast boundaries between subjects of study, with no emphasis on interrelationships between them, must go. About this question there is at present a raging storm of controversy. No adequate discussion of the matter can be given here. Certain points, however, seem reasonably clear and will, we believe, be accepted, at any rate with reservations, by both sides.

First, all enthusiasts for the subject of geography believe that there should be some time and attention given to the subject in the primary

as well as in the upper grades. Few contend, however, for a separate period in the first three grades for the teaching of geography as such. The curriculum for this period of a child's school life is characterized by the study of rich, varied, and interesting units of child experience. It is the contention of geography teachers that their subject should have two sorts of representation in these units.

The first sort consists in definitely using as one criterion for the selection of some of the units their value for the later study of systematic geography. For example, a unit on transportation or one on child-life in another land may well find a place in the program of studies in the primary grades. Such units will include, to be sure, much that is not geography; music, art, history, language, and nature study will all have a part in them. Many basic geographic concepts, however, may be introduced through such units, and although they are not understood in their fulness by these little children, later study will be greatly facilitated through this early acquaintanceship.

The second sort of representation that geography should receive in the primary grades is the result of the primary teacher's understanding of the modern concepts of the nature of geography and of its subject matter. If the primary teacher is fully cognizant of these, and knows some of the details of the geography curriculum in the upper grades, then he will be keenly sensitive to the potentialities of any unit he is teaching for bringing out any possible geographic bearings of the unit. For example, a unit of work on farm life, one on a primitive people such as the American Indian, or one concerned with the building of a play city, while not primarily geography, is yet rich in possibilities for developing geographical meanings. Incidental teaching of these meanings, which, of course, should be presented in an interesting and fascinating way to primary children, may make easy many otherwise difficult parts of the upper-grade curriculum. Incidental teaching should not be accidental teaching; it should be carefully planned and should spring on the one hand from the awareness on the part of the teacher of what geography is and on the other hand from a sensitiveness to geographical subject matter in units of life experience.

Most, if not all, of the authors of this Yearbook believe that a regular period for the study of geography, as such, should find a place in the program of studies of the upper grades. But we are holding no brief for the utter isolation of the subject from all others as was the rule in the past. So broad and rich is the subject of geography that

many other school subjects may make valuable contributions to its study, and it, in turn, may help in understanding and appreciating the other school subjects. For example, a geographical unit on China may be enriched by a study in the art classes of China's contribution to the world's art; a unit on our Eastern States, by some consideration in the history class of the early development of the use of water power along the fall line; or a unit on England, by the reading in the literature class of such poems as may be selected to bring out various phases of British life. Nor must we be understood as meaning that such material from other subjects will find no place in the geography class itself. The good teacher of geography draws on any subject that can make its contribution to his class work, always provided that such material is introduced, not in such a manner as to confuse the children with extraneous material, but in such a manner as to clarify and vivify some important geographical problem or issue that is before the class.¹

In teaching the other subjects, the teacher feels the same freedom to draw upon material from the geography classes as he felt in the geography class to introduce materials from the other subjects. How, for example, can children in an arithmetic class composed of city children find any interest in working out a unit dealing with the quantitative aspects of wheat growing in our Western States unless in the arithmetic class, itself, some of the facts and ideas from geography are introduced?

When, therefore, the modern geography teacher demands a separate period for his subject, he is not in the least contending for an utter isolation of his subject from the other school subjects. He simply believes that there is such a thing as a geographical point of view; that this point of view is most valuable for the intelligent citizen; and that it cannot be grasped and understood if geographical subject matter is simply mixed in with other subjects without separate treatment. In other words, he recognizes the relationship which exists between geography and the other school subjects, but he insists that relationship must not be confused with identity.

Moreover, the modern teacher of geography is unalterably opposed to the forced correlation of subject matter that began in this country with the Herbartian movement, that now, under the different banner of 'units of work,' is confusing a tenuous thread of connection between

¹ Cf. the discussion by Professor Brown in Chapter XII.

items of subject matter with real relationship, and that accepts a chance suggestion from one child in the class as an 'instructional lead' to be religiously followed "because the class has suggested it." 'Units' based on such a foundation belie their name, because they have little real unity; and they fail to give that clear-cut, incisive, and useful geographical point of view which, rather than mere facts alone, is the end and aim of geography teaching.

The geography enthusiast, moreover, does not believe that his point of view violates in the least the two previously stated central principles of modern method. The fact that we are teaching the whole child does not mean that he cannot pursue one train of thought at a time, provided this train of thought is rich and varied enough to enchain his fullest energies. Quite the contrary is true. Moreover, units of geographical subject matter can be so presented that the material is interesting and fascinating to children, as children, and not merely useful for them when they become adults. Few subjects in the curriculum, as a matter of fact, are richer in such possibilities.

VI. A FOURTH COROLLARY AND ITS APPLICATION TO GEOGRAPHY TEACHING

We come now to the final corollary principle of method. This principle has three essential constituents; namely, purposing, thinking, and activity learning. These three have often been thought of as three separate principles. They are so closely bound together, however, and have such an essential unity that they are treated here simply as separate phases of the same idea. Moreover, if any one is separated from the others, as has been done by certain educational practitioners, it loses its vitality and is likely to lead into foolish and indefensible methods.

1. Thinking

The central one of the three ideas is that of the importance of *thinking* in the educative process. "The sole path to enduring improvement in the methods of instruction and learning," says Dewey,¹ "consists in centering upon the conditions which exact, promote, and test thinking. Thinking is the method of intelligent learning; of learning that employs and rewards mind."

¹ Dewey, John. *Democracy and Education*, pp. 179-180.

2. Purpose

Perhaps the most important single element of thinking is *purpose*. The purpose in a thinking process is its *raison d'être*, its guiding principle and its criterion for successful accomplishment. To implore a class to think without first helping them to find a purpose for their thinking is as silly as to ask them to lift themselves by their bootstraps, and as futile as to incite a person to row hard in a boat without giving any orders as to its direction.

3. Activity

Activity is a method of thinking. It may be either mental or physical. Except for the purpose of producing a natural, childlike atmosphere in the classroom, free from undue strain, the importance of which was discussed earlier in this chapter, the only reason for the introduction of activities into the classroom is because they constitute a way of thinking. Just how this is true is illustrated by the following:

An old peasant woman of the hills of Fauglia near Pisa, where I often used to stay, owed me twelve francs that had been given her the previous day to hand to me; I owed her seven francs for expenses she had incurred for me in the morning. "So you owe me only five francs," I remarked. But she was not very convinced. She began to count on the table twelve franc pieces: "There are your twelve franc pieces," she said to me, "now give me my seven francs." I counted her seven francs and it was only then she was convinced that our accounts were completely in order.

Totally different as these two methods appear at first sight, they are only different in that the poor woman found it necessary actually to perform all of the operations of counting, whereas I had performed them mentally, because I knew the final result experimentally.¹

Mere physical activity, apart from a purpose or a worthwhile thought content, is an impotent, useless thing unless the aim is a purely physical one. An 'activity program,' if the physical activity of the children becomes an end in itself, is likely to be a vapid, unorganized series of doings, resulting in little worthwhile learning and in dissatisfaction and poor study and poor character habits on the part of the children. It is the earnest conviction of the writer that the expression 'activity program' leads to much futile and silly classroom practice and

¹ Rignano, Eugenio. *The Psychology of Reasoning* (Harcourt, Brace & Company), translation, p. 72.

that it should either be dropped entirely or changed to read somewhat as follows: 'a program of worthwhile learnings attained by the activity method.'

How does all this affect the problem of teaching geography? To begin with, if thinking is the method of intelligent learning, then it follows that the geography recitation period must be a thinking, rather than a recalling, period. It follows that the memorization of place locations, products, or industries must be done solely for the purpose of expediting thinking and of making it more efficient, and that the typical activity of a geography class should be the location and solution of worthwhile problems.

If purpose is essential to thinking, it follows that the first step in the study of a topic in geography must be the presentation to the class of a rich, interesting, and varied experience or group of experiences with the material to be studied, so that questions, problems, and purposes may have a nourishing soil in which to germinate.

If activity is an essential part of thinking, then the typical recitation of a bygone generation, when children sat stiffly in their seats until galvanized into verbal activity by a memoriter type of question from the teacher, has no place in a modern program of geography instruction. If seated in their places, then the minds of children must be alert and active; probing, challenging, accepting some ideas and rejecting others, making comparisons and contrasts; ever seeking and testing solutions in an absorbing thinking process. But frequently children will not be in their seats. At one time some pupil will be searching the reference table for an authoritative statement on some moot point; at another a child will be demonstrating the truth of some assertion through a map, graph, or table; at still another some inventive student will be showing and explaining a model he has made. Often the entire class will leave their seats to examine more closely a sand-table demonstration or a set of interesting curios on the teacher's desk.

If the desirability of thinking, purposing, and activity be granted, there still remains the problem of proposing some sort of program to secure them. Just how can it all be done in geography classes?

To begin with, the first step in the study of any country or large topic must be the exposure of the class to a rich experience or series of experiences with the material of the unit. Purposes do not spring, full armed, from the head of Jove; they are the result of knowledge, not of ignorance. They cannot be dragged from the heads of children

through a process of Socratic questioning. The worthwhile purpose is the one that exposure to interesting subject matter engenders in the mind of the learner, not the one that the learner proposes to 'cover' or 'bring in' a certain amount of subject matter upon.

Out of such an exposure to fascinating material through such means as a trip to a museum, a talk by a traveller, an examination of an exhibit of curios, the presentation of motion or still pictures, or the reading of some interesting account of the section of the world to be studied, the curiosity of the children will be aroused and stimulated. The presentation of other correlative, corroborative, or contrasting material follows; and then the questions and problems of the children begin to arise. These are recorded, discussed, modified, and reworded, and eventually are accepted or rejected as offering or failing to offer, on the one hand, a challenge to the children's efforts that they are eager to grasp, and on the other, possibilities for profitable study.

VII. THE PROBLEM METHOD IN GEOGRAPHY

1. Some Common Misapprehensions

These problems are, of course, the backbone of the so-called 'problem method in geography.' About this type of method certain grave misapprehensions have arisen.

First, it has often been thought that the selection of a problem is the *first* step in the study of a topic or unit. This cannot be true, unless the teacher selects it. The orienting process already described is essential if children are to bear much of the responsibility for locating and defining the study problems.

A second misapprehension consists in believing that the worth of a problem should be judged on the basis of its scope, or the amount of subject matter it covers. Some teachers seem to feel that a class must have 'one big problem' for a country or section of the United States. Such a point of view is a perversion of the meaning of problem study. The purpose of a problem is to challenge children, not to cover subject matter. The true criterion for its worth is not its scope but the vigor of the children's reaction to it. A series of several interesting problems of fairly narrow scope on a given unit is far better than one big problem of which the children are likely to lose sight in the welter of detail necessary to solve it.

A third misapprehension about problem study is that it is in essential opposition to good journey geography or to topical geography.

While this is too often true, it is not necessarily so. Though children may be engaged in studying a topic or taking an imaginary journey, yet the smaller parts of such study may well be organized in a series of challenging problems or questions. For example, in the study of such a topic as the production of cocoa and chocolate, one of the first matters to investigate might well be the problem, "Why have Ecuador and Colombia been so prominent in cacao production?" If an imaginary journey to Argentina is being undertaken in September, an immediate and vital question to solve would be, "What sort of clothes shall we take in our trunks to keep us comfortable on the trip?"

2. The Problem Method Is a Series of Procedures

Thus problem study in geography is not some special trick or hard-and-fast method. It is simply a series of procedures whose aim is to make thinking the central point of the method of learning.

When the problems have been located, defined, and accepted, the study of them begins. Activity on the part of the children here becomes the typical procedure. Some of this will be mental, some physical; the physical activity will consist in making charts, maps, diagrams, and pictures; in constructive work on the sand table or with clay, wood, pulp or other plastic materials; in exhibits, plays and games. It cannot be too strongly urged that just as Rignano's landlady manipulated actual coins in order to expedite her thinking, so manipulation of real things in children's activities is done in order to investigate, classify, and illustrate the ideas with which they are working. Whenever an activity becomes an end in itself; whenever its connection with thinking and the solution of problems becomes obscure or meaningless to the children, then it loses its value and potency.

One of the finest characteristics of activity learning is that it requires for its successful prosecution the collection and utilization of interesting details. In their desire that children grasp large meanings and principles, adults are prone to forget that the mental life of the boy or girl feeds on details.

For confirmation of the above idea, one need only examine those books which children enjoy. Sometime ago a novel was published which had been written by a child. Every detail of the intimate lives of the characters in the story was told with complete and sometimes startling frankness. The Peter Rabbit stories are another illustration. For years authors of stories for boys have recognized the principle under discussion and their books trace every detail in the life of the

hero. When teachers learn to follow the clear indications of these illustrations, they will spend more time trying to help children to clothe abstractions and principles with a multitude of intimate and fascinating details.¹

3. The Problem Method Leads to a Study of Details: Geographic Personalities

The study of details, then, will almost surely result as a response to the need for carrying on an activity, which in turn is a method of studying a problem. Out of this combination of problem, activity, and details emerges what is, perhaps, the most important result of good study of geography; namely, an understanding of the *geographical personalities* of the countries of the world.²

It is said that a friend of Charles Lamb once chided him for his enmity toward a certain Mr. X. The friend said to Lamb: "You don't really know Mr. X well. Let me bring you two together some time; I think you would like him." Lamb replied: "No, I don't want to know him. If I really came to know him, I would like him, and I do not wish to like him; I wish to continue to hate him."

The study of the geographic personalities of the countries of the world seems to present the best solution of the problem of helping our pupils really to know other peoples in other lands. Only in this way can we hope to attain our first goals of world citizenship and sympathetic understanding, and through these, our ultimate goal of world peace.

VIII. SUMMARY

1. Students of methods for the teaching of geography must derive their conclusions from two sorts of experimental data: first, data on the value of specific techniques in geography instruction; second, data on the nature of the child's mind and on how it may be stimulated to learn most efficiently.

2. There are two underlying principles of modern method; first, that we are teaching the whole child, not one compartment of him; second, that what he learns must have richness and meaning for him as a child. These principles have several corollaries.

3. The first corollary is that the classroom atmosphere should be happy, natural, and free from strain.

¹ Reeder, E. H. *Simplifying Teaching*, pp. 123-124 (Laidlaw Brothers, Chicago).

² For Professor Parker's explanation of 'geographic personality,' see Chapter VIII, Division V, 1.—*Editor*.

4. The second corollary is that attitudes and ideals are more important than primary, easily tested learnings.

5. The third corollary is that geography cannot best be taught in utter isolation from other school subjects. Geography, however, represents a distinctive point of view that warrants for the subject a specific period in the program of studies.

6. The fourth corollary is that thinking is the central point of method; that to make it vital it needs a purpose that the child embraces as his own, and activities to clarify and enrich the thought.

7. Through thinking and activity grow our concepts of geographical personality.

CHAPTER XXI

TESTING IN THE FIELD OF GEOGRAPHY¹

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I. THE PURPOSE OF TESTS

The movement for the measurement of the progress of students is in harmony with current practices in the industrial world. The tremendous strides that have been taken in the fields of chemistry, physics, electrical and automotive engineering would have been impossible without quantitative and qualitative measurements. The effectiveness of instruction, because of the intangible nature of many of the objectives, is much more difficult to measure than the processes and products of factories. Educational testing, as a consequence, has lagged behind the measurement of achievement in the industrial world.

The true measure of the effectiveness of instruction is the lasting influence that it exercises on the life of each pupil. The time span, however, is too long for this measure to be of much assistance to the teacher. Practical considerations require the construction of tests that will have an immediate beneficial effect on instruction.

Tests can be used (1) to discover the bases in the experiences of pupils for a new unit of instruction, (2) to ascertain where the emphasis should be placed in teaching the new unit, (3) to discover the progress of the pupils as they study the new unit, (4) to discover the extent to which the new unit as a whole has been mastered, (5) to dis-

¹ This chapter is prepared by the authors listed, operating as a subcommittee under the chairmanship of Professor Branom. As in the case of other subcommittees, this report has been discussed and endorsed by the Yearbook Committee.—A. E. P.

cover the additional basis in experience, because of instruction, that the pupils have for proceeding to master the unit of instruction next in line, and (6) to stimulate conscientious effort, by holding pupils to account for results. Tests provide a scientific basis for integrating a graded succession of unit situations.

The chief purpose for which tests are used is to assist the teacher to give the pupil a rating of his standing in a course. The teacher, who uses tests exclusively for this purpose, however, fails to capitalize other important possibilities of tests. In a factory, when too many 'rejects' are discovered, a careful survey of all processes is made in an attempt to correct the difficulty. The teacher, analogously, should attempt to discover and remove causes of unsatisfactory work revealed through tests. All tests, in a sense, should be considered diagnostic tests as a means of improving instruction.

II. KINDS OF TESTS

A course of study in geography includes a succession of geographic units. Some of these units may require several assignments. While the teacher conforms her daily assignments to the available time of the pupils, she attempts to integrate the lesson units in such a manner that the attention of the class is directed toward the completion of the geographic unit. The teacher, in relation to the geographic unit, can use (1) a preparatory test, or pretest, (2) instructional tests, and (3) a recapitulatory, or summary, test.

1. Pretests

Before instruction begins, the teacher can give a test that will enable her to discover what the pupils then know about the geographic unit. This preparatory test, or pretest, prepares the pupils for the new unit of work and assists the teacher in the organization of the new unit in such a way as to stress the things that the pupils need to learn. One of the authors used a pretest before a class began a study of the Eskimos and as a result the class, instead of devoting three weeks that had been assigned for a study of the Eskimos, was able to complete this unit in one week.

The teacher should construct a pretest with much care. She should ascertain the exact values to be derived from the geographic unit and the possible previous experiences on which she will need to draw. The pretest should accurately reveal the degree of contact of the pupils

with needed content. Through the pleasure that the pupil receives in discovering that he can answer certain challenges, and through the curiosity that is aroused over the challenges that he cannot meet, a favorable attitude toward the new geographic unit may be established. The pretest thus provides an opportunity for initial motivation.

2. Instructional Tests

Instructional tests can be given any time during the study of a geographic unit. The instructional test may deal with a particular lesson assignment. Pupils should be trained to work as nearly independently as possible. The teacher, in making an assignment, should extend such assistance as may seem necessary. The pupils frequently are expected to spend as much time on a course outside of the recitation hour as inside. The assignment test will assist the teacher and pupil to evaluate the work of the study period and such remedial measures may be taken as seem desirable. If the teacher, through assignment tests, places a stamp of value on the study hour, she provides a strong motive toward a faithful preparation of the lesson. The instructional test may be informal and should be considered a normal part of a day's work. It should be considered as a device to assist the pupil to make more rapid and certain progress. The test helps the pupil to associate achievement closely with the achieving and is a stimulus toward persistent effort in the right direction.

3. Recapitulatory Tests

Preparatory tests and instruction tests should commonly be given without prior announcement. When a geographic unit has been completed, however, time should be taken to enable the pupil to grasp the unit as an interwoven whole. Selected details probably will have been emphasized in the preceding types of tests, but the recapitulatory test should involve a general survey and the general conclusions to be derived therefrom. The recapitulatory test should be a formal challenge and should be the final challenge before the pupil proceeds to a new geographic unit. The standardization of recapitulatory tests is more important than the standardization of instructional tests because in the latter instance the values to be gained for learning are more important than the values to be gained for measuring.

Much of the progress in the field of testing has come from the invention of techniques that have removed the personal factor from

the scoring of the tests. Objective scoring makes it possible for any number of people to score the same paper and get the same results, whereas subjective scoring frequently gives results that are more a function of the scorer than of the product that is being measured. That objective tests displace the teacher's judgment has been advanced as an objection to their use. The teacher's judgment, however, without the assistance of objective measures, is a very uncertain quantity. It is probable that an efficient teacher in charge of a small group of pupils for a long period of time would rate very high in judging their achievements. The facts seem to indicate, however, that most teachers are not infallible in their estimates of the achievements of pupils. Objective tests, in reality, merely assist the teacher in forming a judgment, for the interpretation and application of the tests are a matter of subjective judgment. Objective tests do not displace the teacher's judgment, but merely permit the accumulation of impartial data that help the teacher to reach correct conclusions.

Standardized objective tests are favorably received by the pupils. Informal tests, prepared by teachers, may be so difficult as to discourage pupils or so easy that the pupils secure an erroneous impression of achievement and progress. Subjective tests, with their uncertain standards of measurement, may be unfavorably received by the pupils. Objective tests, when properly used, build up the confidence of pupils, stimulate the pupils to strive to achieve, and establish a bond of comradeship between pupils and teacher.

III. WHAT TO MEASURE THROUGH TESTS

There are various skills and ideals, the teaching of which is shared in common by the teachers of different subjects. These all-pervasive skills and ideals are so important that tentative attempts have been made to measure them in each subject. Each subject, in addition, has its own particular field of content. The most substantial progress in the measurement of achievement in geography has been in the field of content. Since maps and globes are considered special tools of the geographer, supplementary emphasis has been placed on a knowledge of their uses. Since geography has a special mission to perform in the education of students, tests should also be constructed to discover whether a student is geographically minded. Geography is a dynamic subject and the pupil should learn to interpret the changing conditions.

Certain deficiencies of geography tests have been pointed out by Professor Edith Parker, who suggests that tests should be constructed to measure the abilities of children to visualize geographical conditions, to measure their abilities to apply geographical principles, and to measure their abilities to use materials as a source of geographical information. A survey of the opinions of specialists of geography, made by one of the authors, Professor Walther, shows that the specialists agree that the study methods and the psychological processes of learning geography are as important as a knowledge of geographical facts.

The Maryland State Tests in Geography (1929), were constructed by M. Theresa Wiedefeld, State Supervisor of Elementary Education. They include geographic information but also emphasize the psychological factors involved in studying and learning geography. Nine separate tests appeared in this battery of tests and the achievements of pupils were measured in terms of:

1. Study habits and skills
 - (a) Abilities to read geographical materials so as to answer problems.
 - (b) Finding problems in geographical materials.
 - (c) The ability to judge the relative value of geographical facts and to organize geographical materials.
 - (d) The ability to use pictures as a source of geographical relationships.
2. Geographical information.
 - (a) Place geography (Eastern and Western Hemispheres)
 - (b) Vocabulary
 - (c) Place associations
 - (d) Solving problems
3. Appreciations and attitudes
 - (a) Appreciations and attitudes of children toward the people and races of other lands

These tests were designed to stimulate the interest of teachers in the better teaching of the subject of geography, not to serve as a research instrument or as a measure of comparative achievement.

IV. CRITERIA FOR TESTS

The criteria of validity, objectivity, reliability, performance, and interest have special significance when applied to the measurement of achievement in geography.

1. Validity

To meet the demands of validity, the test must measure what it is supposed to measure. Even an information test does not meet the

requirements of validity unless it is representative of the geographic unit. Tests that sample only a limited portion of the field or that stress the less essential parts of the field do not meet the requirements of validity. The most comprehensive attempts that have been made to meet the criterion of validity utilize textbook material as representative of the content field that students will study. Textbooks have been analyzed and tests constructed to sample the various aspects of geography therein stressed.

2. Objectivity

To meet the criterion of objectivity, tests must be constructed so that the same test can be scored in the same manner regardless of the person who scores it. A definite and specific answer is required of each test element and the scorer is obliged to mark each answer right or wrong. To score a child's response either right or wrong is to ignore all the shades of possibilities in thinking processes that intervene. If the test elements, however, are multiplied sufficiently and if the geographic unit is covered rather comprehensively, the objective results seem to be reliable.

3. Reliability

The technique of self-correlation is commonly used to determine the reliability of a test. Each test must give the same results under the same conditions. Substitute tests, comparable in nature and providing together a comprehensive grasp of the content unit, should be provided so as to encourage teacher and pupil to study the unit in all its relational aspects. The probable error of a pupil should be reduced so that it will not vitally affect the results.

4. Performance Norms

The performance of pupils is an important criterion of a test. Scores should not be secured and interpreted on the basis of arbitrary standards of a subject specialist. In advanced college courses the instructor is at liberty to hold the standards as high as possible for a selected group, but in the elementary school, where subjects are means rather than ends, arbitrary standards should give way to the actual performance of children. It is customary to establish a norm by giving a test to a large number of pupils. This norm, of course, does not indicate the standards that should be attained under all conditions. The achievements of a particular class may be lower or higher than the

norm according to the numerous factors that affect instruction in a particular school and class.

5. Interest

If the pupil has a sympathetic attitude toward the test and an intense interest in it, he will make a greater effort to meet the challenges. Interest and fatigue control the pupil's attitude toward the test and condition the results. It is doubtful if any test is a fair measure of achievement of the child if he shows a prejudice or hostile attitude toward it. Interest can be increased and fatigue lessened if the test elements, when variable in difficulty, are arranged in order of increasing difficulty.

V. TESTING GEOGRAPHIC UNITS

The student of geography should learn how to secure and use geographical equipment. He should acquire skill in the isolation and recognition of geographic facts. Geographic facts vary in complexity. A city may be located with reference to latitude and longitude or its location may be noted with reference to a complex of physical and cultural factors. The measurement of achievement in geography should stress the simpler fact-finding abilities in the lower grades and place gradually increasing emphasis subsequently on the more complex relationships. The measurement of fact-finding abilities may include (1) ability to get facts from verbal materials, (2) ability to gain facts from verbal, graphic, and statistical materials, and (3) ability to gain information from maps. The fact-finding skills may be considered the ability of pupils to 'read' verbal geographical material, maps, and graphs.

All teachers will admit the basic importance of the map in the study of geography, although the ability to read a map has been given slight emphasis in most tests of achievement. Most of the maps that have appeared in connection with tests in geography have been used to find what items of information the pupil has. The study of E. A. Nifenecker, in which he attempted to measure the abilities of the school children of New York City to secure information from maps, illustrates a tendency to stress map-reading.

Closely associated with the reading of maps is the ability to secure information from graphs. Maps and graphs are not exclusively the language of geography, but both maps and graphs are essential for the

effective presentation of geographical relationships. The areal distributions of map symbols tie facts together in their spatial relationships; graphs may express relationships that cannot be adequately expressed on maps, or graphs may express quantitative and qualitative factors from a different standpoint. As in map-reading, graph-reading abilities may range from ability to handle a simple graph to ability to handle one of marked complexity.

The measurement of geographical knowledge should include (1) a knowledge of vocabulary, (2) a knowledge of places, and (3) a knowledge of geographical relationships.

The geographical vocabulary includes the names of places and such special terms as *tropic*, *meridian*, *parallels*, *rainshadow*, *specialty-manufacturing*, *factory-farming*, *monoculture* and *hinterland*. Many terms, as *caravan*, *dromedary*, *pueblo*, and *adobe*, have regional significance.

A knowledge of the location of places and place associations is a significant outcome of geographical studies. The facts and relationships of geography should be definitely related to places. The measurement of a pupil's knowledge of places is more difficult than appears on the surface. It is easier to recognize that a certain symbol on a map represents Rio de Janeiro than to place a dot on a map so as to show the location of this city. The former method is better adapted to beginners in geography; the latter method represents a more advanced grasp of geographical knowledge. A pupil should be able (1) to locate the most important places by placing symbols on a map, (2) to find the map symbols that represent a less important group of places, and (3) to use an atlas so as to find the location of any place desired.

An important, although somewhat neglected, phase of measurement in geography deals with the pupil's knowledge of geographical relationships. This aspect of geographical achievement can be measured by tests that deal with causes and effects. Effects may be given and pupils may be asked to state causes; causes may be given and pupils may be asked to state effects. There are all gradations from a relationship between a single cause and a single effect to a complex of causes and effects. The relatively slight progress that has been made in constructing such tests of geographical relationships is due to the difficulties involved in knowing what to measure, how to measure, and whether the right thing is being measured.

VI. THE INTERPRETATION OF TESTS

How are the results of testing to be interpreted? The answer to this question is relatively simple if applied to pretests and practice tests. Here the emphasis is placed on the content of the test and a study of the pupil's reactions will show where the 'teaching point' lies. These types of tests are stimuli to the pupils to improve the learning processes. But a correct interpretation of the results secured from the use of standardized tests offers perplexing difficulties. The mere fact that pupils have made very high scores on standard tests does not necessarily mean that the teaching processes have been adequate. Satisfactory scores merely mean that the pupils have made considerable progress in the subject. The efficiency of teaching should be judged in the light of the advantages and disadvantages that characterize the situation. Estimates of the quality of teaching should be based on two different applications of equivalent forms of a test given at different times. The first test gives a cross-section of existing conditions; the second test, given on the completion of the geographic unit, shows what changes have taken place. The quality of teaching should be judged by the improvement that has taken place. This may be shown by the change in the position of the central tendency, or, better still, by the increase in the percentage of the pupils who have exceeded the standard.

VII. THE FUTURE OF GEOGRAPHIC TESTING

Geography is a dynamic subject, a complex subject, and a subject that is almost limitless in scope. Geographers should determine what should be measured; the test-makers should determine how these factors, with certainty, can be measured. Geographers are slowly accumulating a body of well-organized units of geographic relationships as a substitute for the miscellaneous collections of facts about places that have tended to dominate the content of geography. The raw materials of geography are being integrated into units of meaningful relationships. The diversity of material still presented under the name of geography, however, offers a genuine challenge to geographers. Scientific testing in geography is still in a developmental stage. There is much to be done in the improvement of technique and in ascertaining what is really measured through the various types of tests that have been constructed. It may confidently be predicted, in view of the significant steps that have been taken, that steady progress will

be made both in defining and organizing the content of geography and in improving the technique of testing.

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CHAPTER XXII

THE SUPERVISION OF GEOGRAPHIC EDUCATION

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I. EXISTING CONDITIONS AND PROBLEMS

Striking conditions out of which supervisory problems in geographic education arise are: (1) the irregular and scant training of teachers themselves in modern geographic education;¹ (2) the transition period through which the concept or definition of geography has been passing, with inevitable confusion in thinking; (3) limited equipment as to materials of true geographic quality in elementary and secondary schools and collegiate institutions; (4) difficulty encountered by teachers and supervisors in their efforts to acquire appropriate preparation in this new geographic education, owing in part to the relative scarcity of training centers of high quality.

According to recent publications,² supervision is philosophic, co-operative, creative, scientific, effective.

¹ Geographic education is the growth experienced by an individual when (a) he analyzes and evolves interrelations between life items (primarily human activities and conditions) and elements of natural environment in the various regions of the world and summarizes the outstanding cultural and natural characteristics of each region, (b) he develops analytical and constructive attitudes towards people, things, and places in these regions, and (c) he acquires effective skills and habits in the use of the tools (media) of geographic learning. These experiences should occur in purposeful, social settings and functional sequence.

² Department of Supervisors and Directors of Instruction of Nat. Educ. Assoc., *Current Problems of Supervision*, Third Yearbook, 1930; and *Supervision and the Creative Teacher*, Fifth Yearbook, 1932. (New York: Bureau of Publications, Teachers College, Columbia University). Also Department of Superintendence, Nat. Educ. Assoc., *The Superintendent Surveys Supervision*, Eighth Yearbook, 1929.

Supervision deals with both administration and instruction. Concerning the latter, the complexity of the task in the supervision of geographic education results from (1) the wide expanse of accurate geographic information involved, (2) the constantly changing facts of geography and resulting geographic relationships, (3) the associated necessity for keeping the various learning materials up-to-date, and (4) the small number of research studies in the geographic learning process.

Administrative responsibilities are required in connection with (1) excursions and other field work, (2) the school and district museums, (3) equipment needs for both classes and individual pupils, (4) contacts with citizens of the local community and elsewhere who are traveling and can thus assemble useful articles, such as pictures, specimens, maps, and books. Then, the supervisor has also the combined instructional and administrative duties pertaining to numerous individual and group conferences with teachers and in some instances with parents.

Mention has already been made of the relative paucity of provision for geographic education at the collegiate levels, especially of post-graduate standing, to which the general or special supervisor may turn for training and consultation. Many geography departments lack courses dealing with the technique of geography teaching. Most graduate schools in education lack staff members appropriately prepared and experienced to present functional courses in the supervision of geographic education. Special experience and preparation is needed by members of collegiate departments for presenting such courses. Extension or institute courses for in-service teachers are, after all, as a means of teacher improvement, courses chiefly complementary to those that are offered at collegiate institutions. They cannot take the place of campus and field study.

Thus, the outstanding problems confronting supervision in geographic education have to do with the learning process of the pupils, the geographical materials for learning, the teaching procedures and associated teacher improvement, and the geography curriculum. Supervision in geographic education requires thoughtful gradation and integration of supervisory procedures. But back of it all lies the quality and quantity of specific preparation that the supervisor has had for this particular phase of supervision.

II. PROGRAM AND PROCEDURES

The ultimate purpose of supervision is to improve the products of learning. A given supervisor concerned with the improvement of instruction in geography is confronted with three major problems: (1) What are the *specific* learning products that should result distinctively from the study of geography? (2) In *our* school (or system), which of these results are we failing to secure? (3) In *our* situation, what means can best be employed to secure more and better learning products from the study of geography?

1. Specific, Distinctive Products of Geographic Study

In considering Problem One and answering the question, "Precisely what results should be secured from the study of geography at any given level?", supervisors have been seriously handicapped in two ways. First, few of them have had any training in geography of the most modern scientific type and accordingly few have a background of experience that they can analyze in such a way as to see clearly and concretely the goals for which they should strive. Quite naturally, then, they think chiefly in terms of such general, vague, ultimate outcomes as "sympathetic understanding of peoples," "ability to use maps," and the like. Such statements of generalities are as meaningless as they are ubiquitous in educational writing *unless* one can think in terms of the immediate, distinctive goals, through the attainment of which geography contributes to the larger objectives. Second, descriptive and explanatory geography, as contrasted with the older, merely descriptive type, has been developed at various educational levels so recently that few reports of experts in this teaching of geography have been available. Moreover, the general supervisor can devote, at best, only a part of her time to geographic education.¹ If the supervisor will become familiar with the lists of learning products

¹ It has proved worth while to appoint a well-prepared and adequately experienced teacher as supervisor of geographic education. In some cases the person's entire time is devoted to supervision, as in Baltimore and previously in the Pennsylvania State Department of Public Instruction; in other instances part of the person's time is devoted to supervision and part to classroom teaching, as in West Chester, Pennsylvania; Fort Wayne, Indiana; and other places. In a county organization one person on the staff frequently undertakes special responsibility for the supervision of the geographic education in the county.

and the concrete material presented elsewhere in this Yearbook, she can select specific examples applicable to her own situations in solving Problem One, above. It is not enough for purposes of adequate supervision to center attention only on outcomes to be attained in those grades with which the supervisor is most concerned. Without the view of the various stages of development that are involved in geographic training, one cannot be aware of the part that each outcome plays in the scheme as a whole. With such a guide in hand as these lists furnish, the first of the practical problems stated need no longer be baffling.

2. Survey and Remedial Procedures

Problem Two dealing with the results that are and that are not being secured in a particular school or system necessitates a survey of the immediate situation. Problem Three is one of remedial measures. Instead of treating these two problems separately, each given step in the survey is linked with remedial measures for the defects shown in that step. Much failure in supervision results from trying to do too many things at once instead of surveying for one specific thing and applying remedies to that phase, thus guiding the teachers step by step.

The definite program of supervision here presented is based on these sources of information: analysis of experience in critical observations of classroom work over a period of years; experimentation with the use of various survey and remedial measures; and personal interview and questionnaire investigation.

These sources of information show that weaknesses result in large measure from three things: (1) the failure of teachers to differentiate between descriptive and scientific (descriptive and explanatory) geography; (2) their failure to differentiate between groups of interpretative ideas and real units in which interpretative ideas are merely steps toward the acquisition of geographic understandings of a larger order; (3) their failure to recognize gradations in learning difficulties (shown by the selection and use of tools of geographic learning). Since the selection of materials and teaching procedures in geographic education hinge on ability to make the first two differentiations, it is futile to attempt to remedy defects in the selection and use of materials until teachers are aware of precisely what kinds of ideas they want those materials to yield. This need accounts for the order of the five steps

in the program of supervision here proposed¹ and for the emphasis on developing the ability on the part of teachers to make these differentiations. Observation or clinical lessons can be effective, economical means of learning and should be taught by teachers and supervisor.

Step I

(Discovering where emphasis is placed in scientific—descriptive and explanatory—*versus* merely descriptive geography and aiding teachers to correct their misconceptions)

A. Survey Questions

1. Note questions asked by teachers or pupils. See how many call for mere facts and how many for interpretative geographic ideas² and also whether the desired learning product was set up as a problem for solution.
2. Note whether in teachers' and pupils' discussion the emphasis is placed on mere facts or on interpretative ideas (relationships).
3. Note where emphasis is placed in the various exercises: motivative, assimilative, and summarizing.

B. Remedial Measures with Follow-Up Supervisory Activities

1. Group discussion on nature of geography.³ Illustrations selected should be simple, distinctive (unhackneyed), applicable to class work, varied.
2. Distribution of bulletin on nature of geography to the teachers for study.
3. Have each teacher list geographic relationships dealing with a region she is going to teach.
4. While visiting the teacher, record and commend improvement in all lines under 1.

¹ F. E. Lord, Department of Education, Michigan State Normal College, Ypsilanti; Edith Parker, Department of Education, University of Chicago; Anna James, Supervisor of Geography, West Chester, Pennsylvania; Erna Grassmuck, former Pennsylvania State Director of Geography, and others have contributed in evolving these procedures. Appreciation of their critical reading of the entire manuscript on Supervision and their valuable comments is also expressed to Beatrice Tharsom, State Supervisor, Department of Public Instruction, Bismarck, North Dakota; Clara M. Shryock, Assistant Superintendent, Cambria County Schools, Ebensburg, Pennsylvania; Julia B. Rue, Geography Department, and Elsie J. Cook, Training School, State Teachers College, Minot, North Dakota; Jeannette Donaldson, Supervisor, Elementary Division, Department of Education, Olympia, Washington; L. Bradbury, Supervisor, State Department of Education, Madison, Wisconsin.

² See the discussion by Professor Parker in Section II.

³ W. H. Burton. *The Supervision of Elementary Subjects*. (New York: Appleton, 1929) Chap. VII.

5. Note whether the teacher is developing concrete and accurate concepts of natural and cultural items which are essential in building relationships. Observation lesson taught by the supervisor for the teacher may be advisable.

6. Note how relationships are being expressed by teacher and pupils—whether accurately stated, using terms such as “is related to,” “is due in part to,” “helps to explain,” “partly because,” or stated in terms that are too absolute to be correct, for example “because of.”

7. At another meeting called for those teachers still harboring misconceptions of the nature of geography, discuss specific errors noted or issue a bulletin analyzing them.

(The mastery of Step I is necessary before taking Step II)

Step II

(Discovering whether teachers understand the nature of geographic units and leading them to better concepts)

A. Survey Questions

1. Note whether or not relationships are merely grouped or are used to develop a major understanding.

2. Note the types of major ideas that are being developed—whether or not accurate impressions of regional personalities are being presented.¹

3. Record any irrelevant material that is introduced.

B. Remedial Measures with Follow-Up Supervisory Activities

1. Group discussion on the nature of a geographic unit.

2. Distribution of mimeographed bulletins dealing with the nature of a geographic unit.

3. Observation lessons available to teachers showing (a) the introduction of a unit and (b) the summary of that unit, with an analysis of the lesson.

4. Have teachers group relationships so as to develop a major understanding of a region they are teaching or are going to teach.

5. During visits to the classroom, record and commend improvement in all aspects of Step II.

6. Continue to note whether teachers are leading pupils to build concrete and accurate concepts of natural and cultural items into essential relationships, as stated in Step I.

7. Continue to note whether form of expression of relationships is accurate, as stated in Step I.

8. Re-analyze and re-discuss the nature of geographic units with those teachers showing need for additional guidance.

Step III

(Discovering ability to select materials of various types in terms of the minor and major interpretative ideas they are to yield, and finding means of improving such ability)

¹ A ‘regional personality’ is defined and explained in Chapter VIII.

It is advisable to consider one type of material at a time. Landscapes, real or pictured, are the most concrete and most basic type in gaining concepts. Next on the basis of concreteness should come maps, word matter, specimens, graphs, and statistics.

A. Landscapes (real or pictured)

a. Survey Questions

1. Is the landscape one which yields a needed interpretative idea (or ideas) of geographic significance?
2. Is the concept or interpretative idea vital to this unit?
3. Is the group of pictures selected for a given unit such that balance is maintained in the various outstanding human characteristics of the region?
4. Is the group of pictures selected such that balance is maintained in the various outstanding natural characteristics of the region?

2. Remedial Measures with Follow-Up Supervisory Activities

1. Discussions with selected samples, bulletins, and demonstrations designed to show teachers specifically how to apply the survey questions just given when they are selecting landscapes or pictures. Observation lessons would be advisable.
2. During a visit to the school, analyze with the teacher the pictures she has selected for the unit that is being presented or as soon to be presented. Guide the teacher in filling gaps in such a group. Commend teachers who have acquired considerable ability in selecting pictures according to the survey questions.

B. Maps

b. Survey Questions

1. Is the map one that yields correct ideas of cultural or natural items: features, activities or conditions, or both, needed in the given unit? Does it conform with the standards of a good map?
2. Is it one which children can read easily at this stage of learning?

2. Remedial Measures with Follow-Up Supervisory Activities

1. Discussions (with selected samples of good and poor maps), bulletins, and demonstrations to show teachers specifically how to apply these questions in selecting maps.
2. During a visit to the school, analyze with the teacher the map equipment and guide her in evolving ways of supplementing it. Commend teachers who have acquired considerable ability in collecting printed and sketched maps selected according to the criteria here outlined.

C. Word Matter

a. Survey Questions

1. Is the word matter such as to yield correct ideas of cultural or natural items needed in the given unit?

2. Does the word matter contain outstanding geographic relationships needed in the unit?

3. Is it material that the pupils can read with comprehension at this stage?

b. Remedial Measures with Follow-Up Supervisory Activities

1. Discussion with selected samples of advisable and inadvisable word matter and observation lessons showing specifically how to apply these questions in selecting word matter.

2. Guide teachers during visits as already indicated with pictures and maps in this step.

D. Specimens and Models

a. Survey Questions

1. Is the specimen or model such as to yield correct concepts of the cultural or natural features essential in a given unit?

2. Is the material of such size that the pupils can benefit by observing it?

3. Does the label reflect the geographic viewpoint?¹

b. Remedial Measures with Follow-Up Supervisory Activities

These would be similar to the measures and activities already proposed.

Step IV

(Discovering ability to use effectively each type of material selected and increasing such skills.)

A. Pictures

a. Survey Questions

1. Are children learning to note (a) cultural items, (b) natural items, and to suggest probable relationships between them?²

2. Can the ideas which are gained from pictures be acquired more accurately from pictures than from other types of materials?

3. Are the ideas gained from pictures being used to an appropriate extent in (a) motivation exercises, (b) assimilation or problem-solving, (c) in summarizing and testing exercises?

4. Are the pictures being used merely to demonstrate or illustrate ideas given in other ways or are children being guided to get initial ideas for themselves from pictures?

5. Are teachers conscious of the steps in picture-reading ability and so shaping the exercises as to utilize the highest stage of picture-reading ability that the given children have developed?³

¹ Consult Laura O'Day. "Educational value of geographic exhibits for public schools." *Journal of Geography*, 31: Jan., 1932, 21-26.

² See the study by Lora Dexheimer in Chapter XXX.

³ See Margaret Uttley's discussion in Chapter XVI.

b. Remedial Measures with Follow-Up Supervisory Activities

Proceed as suggested in Step III, guiding teachers in the correct and varied uses of pictures and commending creative work on the part of teachers and pupils.

B. Maps

a. Survey Questions

1. Are the children learning (a) to note cultural items (features, activities, or conditions), natural items (features, activities, or conditions), and (b) to suggest probable relationships?

2. Are the ideas which are gained from maps such ideas as maps can yield better than can other types of materials: ideas of location, shape, extent, directions, and distribution of natural and cultural items?

3. Are the children translating maps into actual landscape imagery?

4. Are the ideas gained from maps being used to an appropriate extent in (a) motivating exercises, (b) assimilation and problem solving, (c) summarizing and testing exercises?

5. Are the maps being used to guide children to secure ideas for themselves (activity *versus* passivity)?

6. Are the teachers conscious of the steps in map-reading ability and so shaping the exercises as to utilize the highest stage of this ability that the children have developed? Is every new map idea, symbol, or concept introduced in such a way as to give the children real understanding and power to use it at later levels?

b. Remedial Measures with Follow-Up Supervisory Activities

Proceed as indicated in prior sections.

C. Word Matter, Specimens and Models, Graphs and Statistics

Analyze the use of these other types of materials having geographic quality as indicated in prior sections.

Step V

(Discovering the teacher's knowledge of definite, immediate outcomes to be realized from proper teaching and learning and expanding such knowledge, and discovering whether or not a recognition of these outcomes is evident in the summary and expression activities, including tests, performed by the pupils and deepening the existing stage of recognition.)

a. Survey Questions

Do the types of final exercises and tests which the teachers are using really test the desired outcomes, and do they show that mastery of the analyses has been achieved as suggested under Survey Questions in Steps I, II, III, and IV?

b. Remedial Measures with Follow-Up Supervisory Activities

1. In remedying weaknesses, guide the teachers in becoming fully acquainted with the specific outcomes which should be realized.¹

2. By means of (a) group discussions during which samples of good and poor tests are introduced, (b) bulletins, (c) observation lessons, and (d) exchange of satisfactory tests constructed by some of the teachers in the local district, guide teachers in (a) evolving standards for building and selecting good geographic tests that conform with the desired geographic understandings, (b) administering such tests, and (c) analyzing and utilizing the findings for purposes of diagnosis as well as grading.²

The supervisor will be alert to evidences of the integration of a given unit (that is being developed) with previous geographic learning products. Other kinds of learning products previously acquired in science, literature, history lessons, and other phases of education should also be integrated with the given geographic unit.

A program of supervision might well be outlined for two to five years ahead. It should take into consideration (1) curriculum work, including careful analysis of learning procedures; (2) teacher improvement; (3) geographic equipment; (4) professional and community coöperation in the process of, and achievement of, geographic education; (5) the amount of time at the supervisor's disposal for supervision in this field.

Specific goals for each year should be formulated in conjunction with the instructional and administrative officers of the school system. Details for achieving these goals will be evolved through the coöperation of principals and committees of teachers. However, only those teachers should be assigned as committee chairmen who have sufficient preparation and experience in geographic education. Other teachers may gain valuable in-service training when they work with competent leaders and may in time also make contributions.

III. THE SUPERVISOR'S RELATION TO THE GEOGRAPHY CURRICULUM

Curriculum work is a continuous process of modification. The supervisor bears the responsibility of making constantly available a collection of courses of study (good and poor, for comparison) that may be consulted by individual teachers and by committees. The

¹ Consult the chapters in this Yearbook discussing various levels of the curriculum: Chapters X, XIV, and XVI.

² See Chapter XXI for a discussion of testing in geography.

collection should include the entire span of educational levels, from the primary through the senior high school. In analyzing and evaluating these courses the teachers might well be urged to apply the following criteria: first, conformity with the modern concept of geography; second, social importance of the units; and third, gradation in learning difficulty.

There must be teacher participation in keeping a given district's course of study functional. Selection of teachers for such services should be based on specific *recent* experience with geographic knowledge—for example, college courses in recognized geography departments within the last five to seven years and subsequent travel 'with geographic eyes.' Additional requisites for truly worth-while contributions to curriculum work are: (1) basal training in educational psychology as applied to geographic understandings, (2) experience with geography teaching, preferably in several grades, (3) sensitiveness to learning difficulties, (4) skill in effective gradation of geographic learnings, (5) constant study of research investigations in this field, (6) sensitiveness to diagnosis and remedial teaching.

In curriculum construction a major responsibility for the supervisor is that of having the work definitely progressive in learning difficulties, by educational levels of the school grades. Critical evaluation of the degree to which a course of study in use is lending itself to the attainment of geographic outcomes desired at various grade levels is essential.

In the past there have been wasteful repetition and little gradation in geographic education. In the future the construction of bibliographies will also require more thoughtful attention of the supervisor.

IV. THE SUPERVISOR'S RELATION TO THE GEOGRAPHIC EQUIPMENT

Certain portions of the equipment, such as a physical-political globe, basal physical-political and other world and continent wall and desk maps, and special reference books, pamphlets, pictures, and specimens should be constantly at hand in each room; other portions of the equipment can be assembled and functionally organized in a definitely designated space, to which every class or teacher has access. Additional equipment may be kept in a school district museum. Policies for the accumulation, allocation and organization, and distribution of

the various kinds of geography tools will be formulated by the supervisor in coöperation with teachers and building principals.

Two major administrative problems confront the supervisor: (1) allocation of equipment and (2) continual adjustment of the equipment owing to changes in the field of geographic knowledge and in instructional needs resulting from curriculum revision. Both problems are closely related to instruction.

Certain selected pictures, maps and globes, specimens, books, magazines, and statistical materials for reference use, and certain material for constructing expression work, such as outlines, desk and wall maps, guide sheets, check lists, tests, and media for evolving booklets, posters, and similar construction equipment should contribute to a ready achievement of the learning products. Tables are preferable to small desks. Shelves or racks are needed for books and magazines. Appropriate filing space is necessary for pictures, newspaper clippings, and pamphlets. Cabinet and shelf space is essential for specimens, objects, and models, and closet and other storage space is essential for maps, charts, and similar material.

It is the supervisor's responsibility to assist in equipping an individual school building so as to serve the geographic learning needs of the educational levels represented in that school: (1) general and specific geography reference material, (2) special loans of expression work produced in some other school or district, (3) loaned and purchased materials from museums or special agencies.

The school district museum is also producing large returns on its investment. Such a museum contains loan collections that are circulated through the district and also permanent collections that parallel the organization of the geography curriculum and that offer enrichment materials for regions not specifically stressed in the basal curriculum units but of value to pupils who learn rapidly.

The supervisor should give constant attention to the adjustment of the equipment, both in the school buildings and in the museum, to the changes in geographic knowledge and the needs resulting from curriculum modification. Carefully constructed checking devices should be evolved for evaluating not merely textbooks but also library books. This responsibility implies coöperation with the local public library as well as with the various school libraries. Books should be selected for quality and organization of geographic material and interest and style suitable for various reading abilities.

V. THE SUPERVISOR'S RELATION TO TEACHER IMPROVEMENT

Effective teaching of geography necessitates balanced preparation both in the field of modern geography and in the psychology of geographic learnings. Such preparation has been acquired in so far as the given teacher has been led during her attendance in teacher-training classes or while in service to analyze her own learning habits with geographic materials and to evaluate the effectiveness and wastefulness of both her own habits and the procedures in case studies presented by the college instructors and other members of the class.

The nucleus must be true geography; namely, the relations between the cultural and the natural aspects of a given region, be it a political, an economic, or a natural region. Hence, to guide pre-service or in-service teachers in the analysis and evaluation of geography learning or teaching, the supervisor should herself be thoroughly familiar with the fundamentals of regional geography and of the learning and teaching processes of geographic education.

The teaching process used during a given class period is concrete evidence of (1) the teacher's experiential background in geographic subject matter and the technique of geographic learnings, (2) pupil reactions to certain geographic tool stimuli, (3) changes in the pupils' lives so far as geographical thinking and feeling are concerned, (4) *esprit de corps* among the teacher and pupils during geographic learning situations.

Thus, during the observation of a teacher-and-pupil activity period, the supervisor will make notes along each of these four lines:

First, the given teacher's status in the field of geographic knowledge should be determined as to (1) concept of geography, (2) knowledge of fundamentals of geography, (3) specific geographic knowledge of the given region under discussion. Closely allied definite notes should be made of strengths and weaknesses of the geographic teaching technique used by the teacher. Each kind of geographic tool has one or more types of contributions to make in a given geographic learning situation. The teacher is classified according to her skill in selecting the better medium or media whereby the pupil or pupils may achieve the potential learning value. Verbal matter can never achieve the definite imagery of location that can be acquired through true map-learning. Nor can words ensure the more exact concept that is likely to result from the use of one or more pictures, be the goal a cultural item, a natural item, or a geographic relationship. This is particularly

true since great variations in experiences exist among even a small group of children. The picture is a "more determining medium."

Second, during pupil reactions to a given geographic tool stimulus the supervisor may note evidences of (1) accustomed or non-accustomed use of such type of tool, (2) study habit with that tool, (3) emotional attitude towards the tool. The tool or medium may be a specimen, table of statistics, a landscape (cultural or natural) pictured or seen during an excursion, word matter, a map, or an experience that is being related by another person. Pupil sensitiveness in accepting or rejecting each tool that is introduced is one evidence of the study habits developed prior to the observation. Satisfaction or disappointment with a tool that has been utilized should be apparent. Joy at the introduction of a pertinent tool may be an evidence of previous good teaching or effective learning or both.

Third, changes in the pupil's life cannot always be observed at the first visit, but distinct evidences of such changes should be apparent during later visits with the same class. After several months' work in a given class, there should be noticeable insistence by the pupils that geographic thinking necessitates the tracing of relationships between cultural items and natural environmental items. In other cases, a majority of the class may achieve this goal in a few weeks. Geographic feeling is closely allied to thinking; evidence of its existence is especially apparent when the child or the class refuses to accept any decision concerning peoples or places unless the geographic aspect of the situation has been considered. The depth of geographic feeling in a given child should also be discernible in some learning situations in other subjects, as in history and literature.

Fourth, modern living demands a threefold intelligence—ability to work (a) with definitions, names, and symbols, (b) with objects, (c) with people. Intelligences (a) and (b) are considered in the first and second lines of observation treated above. The *esprit de corps* between teacher and pupils and among the pupils themselves shows whether or not the teacher recognizes the advisability of having the pupils learn to work with others. The supervisor will make note of the attitude between teacher and pupils. The child who has achieved a desired status of geographic thinking and feeling should be willing to help another child reach the goal, by directing his attention to a useful tool or sharing with him some of his own tools. The teacher will at all times recognize the contributions which the slow-moving child as well

as the swifter child makes in the building of a geographic understanding. Through it all, the teacher is a guide, not a dictator.

Supervision in geographic education, as in other phases of education, should be coöperative, democratic, and creative. "Coöperative supervision stresses the *harmonious working together* of teachers, principals, and supervisors upon the problems of classroom instruction."¹ There is "respect for personality. Democratic supervision encourages initiative, self-reliance, responsibility, and intelligent participation of teachers, pupils, and supervisors alike in the development of educational policies."² Teachers should want to discuss with the supervisor their problems and interests in geographic education. The supervisor, in turn, should welcome a teacher's invitation to observe her work when she thinks she will have a good lesson. "Creative supervision stresses the constructive, expressive, and rediscovery aspects of supervision."³

VI. A SUPERVISOR'S GUIDE IN PROMOTING INDIVIDUAL TEACHER IMPROVEMENT

Step I

(Diagnosing the status of the given teacher's preparation and technique)

1. Analyze her experience with (1) geography courses taken as campus and field work, (2) educational psychology as applied to (a) geographic learnings, and (b) geography teaching. This analysis is of tremendous significance.
2. Evaluate her experience with (1) college instructors well prepared in modern geography, (2) appropriately equipped geography college laboratories, (3) college instructors widely experienced in the science of teaching geography.
3. Record the recency and variety of the teacher's preparation.
4. Classify the teacher's technique according to Steps I to V.

Step II

(Guiding the professional growth of the given teacher)

1. Through conferences and observation lessons, gradually lead the teacher through Steps I to V. Aid the teacher to realize that a geography lesson or unit is not a recitation of isolated facts of surface, climate, other natural resources, and of people and locations with an occasional use of pictures and maps; but it is rather a scientifically graded series of experiences with geographic relationships and personalities dealing with regions and problems

¹ A. S. Barr. *An Introduction to the Scientific Study of Classroom Supervision*. (Appleton: New York, 1931) p. 17.

² *Ibid.*, p. 17.

³ *Ibid.*, p. 22.

involving the use of tools or media of true geographic quality. All these experiences will help the child to develop intellectually, emotionally, and socially.

2. Observe, study, analyze, and evaluate the teacher's technique. When advisable, demonstrate improved ways of achieving the goals for which she was striving or more worth-while goals; then discuss the technique that has been used. The analysis of a lesson taught either by the teacher or by the supervisor might be based on the following guide:

- (1) definiteness of goals in terms of
 - (a) information
 - (b) habits and skills
 - (c) attitudes and appreciations
- (2) psychological development of the lesson
 - (a) starting from concrete or deeply experienced material and leading to and arriving at mastered landscape, word, or map concepts, and in later grades also graph or statistical concepts
 - (b) selecting carefully, according to the particular geographic learning process, each learning medium or tool that was introduced into the lesson either for study or test purposes
 - (c) proceeding from less complex to more complex geographic understandings
 - (d) evolving each minor geographic understanding during the lesson because of its specific contribution to a major geographic understanding of the unit
- (3) accuracy of the geographic data introduced into the lesson as to
 - (a) authenticity
 - (b) recency
- (4) intellectual and emotional growth of the class as individuals and as a social group

3. Expose the teacher to guides in evaluating attainments that are the results of careful investigations made at various levels of geographic education: (a) standards for geographic tools—pictures, maps, and globes, word matter, specimens and models, graphs, statistical materials, and associated achievements; (b) analyses of geography tests, standardized and unstandardized; (c) case studies in geography learning.

4. Expose the teacher to opportunities in the same or other schools for the observation of effective geography teaching, step by step, most applicable to the needs of this particular teacher. Be sure to analyze these observations with the teacher and coöperatively decide upon ways for utilizing some of the techniques observed.

5. Encourage the teacher to evolve means whereby in summer session or during the school year she may study at geographic education centers of high quality. Such centers offer modern geography courses, technique courses in geographic education, and observation of clinical lessons with pupils at several levels of the school system.

6. Arouse the teacher's desire to attend (a) professional meetings in geographic education and (b) lectures of true geographic quality. There is a State Council of Geography Teachers in practically every state.

7. Encourage the teacher to experiment along some special path of her own interest or of contributory value to a larger study that is part of the district's program in geographic education.

8. Encourage the teacher's longing to travel with 'geographic eyes,' preferably after fundamental courses in geography have been taken. Suggest as a speaker at local service clubs and other organizations a teacher who is answering the call of *Wanderlust*. These contacts will help her to realize the usefulness of continued geography learning as a means of adult education.

9. Invite the professionally, as well as emotionally, equipped teacher to participate in clinical observation teaching before professional conferences, parent-teacher meetings, and similar gatherings.

CHAPTER XXIII

THE TRAINING OF GEOGRAPHY TEACHERS¹

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I. THE PROBLEM AND THE COMMITTEE PROCEDURE

The problem of the subcommittee dealing with the training of teachers was to study the present education of geography teachers and to recommend a teacher-training program. The field covers the training of teachers for elementary and high schools, training of teachers in service, training for supervision, and training for positions in teachers colleges.

Through correspondence this committee reached an agreement upon the data needed for the study and the phases of it on which the judgment of many people was desired. The questionnaire for the securing of such data was sent to each of the teacher-training institutions in the United States. Reports were received from nearly all of these institutions. All the data were compiled, and a copy was supplied to each member of the committee. A separate and special questionnaire covering the problem of training teachers in service and the problems of geography supervision was sent to more than 2800 teachers distributed according to population throughout the various states. In addition, the results of individual study of teacher-training prob-

¹This chapter is a report of a subcommittee on the training of geography teachers, of which Mr. Miller served as chairman. The various sections of the report were prepared primarily by or under the immediate direction of the following: Training Geography Teachers in Service, Alison E. Aitchison; Relation of Elementary- and Secondary-School Curricula to College Curricula, Cora P. Sletten; The Teachers-College Curriculum in Geography, George J. Miller; The Training of Geography Teachers in Universities and Liberal-Arts Colleges, J. R. Whitaker.

The personnel of the subcommittee follows:

George J. Miller, Chairman, State Teachers College, Mankato, Minnesota.
Alison E. Aitchison, State Teachers College, Cedar Falls, Iowa.
J. R. Whitaker, University of Wisconsin, Madison, Wis.
Cora P. Sletten, State Teachers College, Mankato, Minnesota.
Lynn H. Halverson, State Teachers College, Marquette, Michigan.
E. Myrtle Grenels, State Teachers College, Farmville, Virginia.

lems in recent years were utilized. By correspondence, the criticisms and judgment of many workers were obtained. The Chairman spent the spring of 1931 in a personal study of the teacher-training institutions of England.

Special committees were appointed to study specific phases of teacher training and to prepare a preliminary report. Copies of these reports were supplied to each member of the general committee.

At a conference of the general committee all reports were studied and the general report here presented was prepared.

The completed report was submitted for criticism to a number of persons in different sections of the country.

II. THE PRESENT SITUATION

Data collected by this committee and by other committees at work upon the Yearbook show the following situation, and indicate some of the needs that must be met in the preparation of a teachers-college curriculum.

1. Students entering the teachers colleges of the country have had almost no geography since they were children in the grades. In most cases they have had none since they were in the seventh grade.

2. Great numbers of elementary-school and high-school teachers, supervisors, and administrators now at work in the schools have had little or no training in geography beyond what they received as children in the grades.

3. Little or no geography is required in teachers colleges, even though most of their graduates become grade teachers and will teach geography if working above the third grade.

4. Many teachers in teachers colleges have had inadequate training in geography.

5. There is great variation in the geography curricula of the teachers colleges in the United States. In some there appears to be no basis for the courses given. In others special local needs have determined the organization of the curricula.

6. Teachers colleges in the United States are in the early stage of evolution from two-year normal schools to four-year colleges. The great majority of the students are still in the two-year course designed to prepare teachers for some phase of elementary work or for general grade teaching in the elementary school. This makes it necessary to provide a basic curriculum that may be pursued by most students in

either the two-year or the four-year curricula, so arranged that the work will be continuously progressive and all on a college level, and that will entail a minimum of credit loss if a student changes from one curriculum to another.

7. Various agencies are endeavoring to raise the standard of teachers colleges. Curricula designed to train geography teachers for elementary and secondary schools and for teachers college positions should meet the standards now definitely established. Anything less would fail to prepare for the immediate future.

III. A STUDY OF THE TRAINING AND NEEDS OF TEACHERS IN SERVICE

1. Methods of Procedure

A questionnaire was sent to 170 different school systems for the purpose of ascertaining (1) the status of geographic training of geography teachers in elementary and junior high schools, and (2) their felt needs. In sending the questionnaire an endeavor was made to secure from every state data from schools in towns and cities of different sizes. Therefore from the *United States Educational Directory* a selection was made in each state, where possible, of one town in each of the four following population classifications: 2,000 to 5,000, 10,000 to 20,000, 30,000 to 40,000, and more than 60,000.

On the assumption that larger city systems are more likely to have departmental systems of teaching, it was thought that such selection would give a fair proportion of departmental teachers of geography and of those who taught geography only as a part of their regular grade work.

The cities were selected at random except that those containing teachers colleges were avoided, since a teaching corps in such a city would be likely to have an abnormal percentage of trained teachers or might be used as a training school for college students.

In each case the questionnaires were sent to the city superintendent, accompanied by a letter explaining why the information was desired and asking him to give the questionnaires to geography teachers in the system.

2. The Questionnaire

Fellow Geography Teacher: A committee working on the Yearbook for the National Society for the Study of Education is desirous of obtaining the following information.

Are you teaching geography in departmental work.....
or as part of regular grade work?.....

Grade or grades in which you teach geography.....
 Did you study geography when you were in high school?.....
 If so, what courses did you have?.....
 Number of hours of college credit in geography which you have had stated in
 a) semester hours (18 weeks)..... or b) terms hours (12 weeks).....
 Names of institutions in which you took this college geography.....
 Names of the college geography courses which you have had.....
 Have you a geography supervisor in the school system?.....
 If you could have some help in your geography work at present, which of the
 helps below would you most desire? Indicate by placing number 1 in front of
 first and 2 in front of second.

A detailed course of study	Supplementary geographic reading
A different text	A college course in methods for
A supervisor	yourself
More equipment	A college course in subject matter

TABLE I.—AMOUNT OF TRAINING IN GEOGRAPHY REPORTED BY A REPRESENTATIVE GROUP OF GEOGRAPHY TEACHERS IN THE ELEMENTARY SCHOOLS AND JUNIOR HIGH SCHOOLS IN 1931

	Departmental		General Grade		Both	
	No.	Percent	No.	Percent	No.	Percent
Number Reporting	489	100	534	100	1023	100
Training beyond 8th grade						
None	62	12	123	23	185	18
Some high-school geography.	275	56	248	47	523	51
Some college geography*....	352	72	377	70	729	71
Amount of college geography						
None	137	28	162	30	294	29
1 to 5 term-hours.....	140	29	211	39	351	34
6 to 10 term-hours.....	77	16	95	18	172	17
More than 10 term-hours....	135	27	71	13	206	20

* Includes in many cases only (1) a six-weeks summer course, (2) a three semester-hour course, and (3) courses of little geographic quality.

TABLE II.—HELPS IN GEOGRAPHY MOST DESIRED BY A REPRESENTATIVE GROUP OF 1023 ELEMENTARY AND JUNIOR HIGH SCHOOL TEACHERS IN 1931*

Kinds of Help Desired	First Choice		Second Choice	
	No.	Percent	No.	Percent
Supplementary geographic reading material...	212	22	244	30
Course in methods.....	177	18	130	16
Equipment	155	16	146	18
A different text.....	153	16	75	9
Detailed course of study.....	150	16	72	9
Course in subject matter.....	96	10	136	17
A supervisor	18	2	9	1

*Some reports on choice were thrown out because items were checked indiscriminately, and some reported no choices.

TABLE III.—ANALYSIS OF FIRST CHOICES IN TABLE II ON THE BASIS OF THOSE WITH AND THOSE WITHOUT COLLEGE TRAINING IN GEOGRAPHY

Kinds of Help Desired	Teachers with College Training				Teachers without College Training			
	Dept	Grade	Both	Pct.	Dept.	Grade	Both	Pct.
Supplementary geographic reading material.....	51	117	168	24	15	29	44	17
Course in methods.....	57	47	104	15	43	30	73	27
Equipment.....	69	45	114	16	27	14	41	15
Different text.....	50	59	109	16	22	22	44	17
Detailed course of study..	60	63	123	18	13	14	27	10
Course in subject matter..	39	27	66	9	15	15	30	11
A supervisor.....	5	6	11	2	1	6	7	3

3. The Data Secured and Their Significance

Of the 2800 questionnaires sent out 1023 usable answers were returned by 489 departmental teachers and 534 general grade teachers representing 41 states and 73 school systems.

Facts about the training of these 1023 teachers are shown in Table I and expressions of their professional desires in Tables II and III.

While Table I shows that 523, or 51 percent, report some high-school geography studied, this, in nearly every case where specific courses were mentioned, was either physical geography or commercial geography. Table I also shows that 71 percent of all the teachers listed have had some college geography. This, too, may convey an exaggerated idea of the situation, since in some cases the college work listed was only a six-weeks summer school or a three-hour course throughout a semester, and in other cases a course was listed by a name that would make one question its geographic quality.

The data furnished on the question regarding a geography supervisor were not usable, as it was impossible to distinguish whether the supervisor was for general elementary subjects or for geography alone.

This group of a thousand-odd taken at random from the geography teachers of the country shows a notable lack of training in subject matter. While the questionnaire reveals many well-trained geography teachers, it also reveals many, both departmental and grade, who, having had no courses in geography either in high school or in college, desire none—not even to the extent of making the gesture of checking the item in the list. Table III shows that, out of 266 teachers without college training, 163 make a first choice of some item other than a course in subject matter or a course in methods.

It would be encouraging to note that nearly one-half of the thousand-odd are departmental teachers, were it not for the distressing revelation that 12 percent of them have had no systematic training in subject matter beyond what they had in grades on a level with those in which they are now teaching. This is a most serious situation, since a departmental teacher very frequently has the same group of children throughout several grades and the entire set-up of their geographical thinking may be determined by her handling of the subject matter. Since training children to think geographically is the main objective of our geography-teaching, the desirability of having a teacher who is herself trained in this thinking is obvious. When asked to choose among the various helps, only 15 of the 137 departmental teachers without college training make a course in subject matter their first consideration. It is true that a gratifyingly large percentage asks for a course in methods. But it is evident that many geography teachers and many school superintendents do not realize that geography is a science for whose successful teaching long and careful preparation is necessary.

From the standpoint of the superintendent it is poor economy to place in the position of departmental teacher of geography one who has had no college training in the subject. It might be argued that this could be said equally well for any subject but is such an argument strictly true? In the high school, English is taught every year, several courses in history are offered and several in mathematics. All of these are taught by trained teachers. If even one semester of geography is offered in high schools, it is usually taught by anyone who has a vacant hour, regardless of training, and is often a farce so far as giving geographic insight. Pupils in the grades are entitled to expert instruction in the use of geographical tools; they should have a wide range of profitable geographical reading selected for them; they need an introduction to a world whose problems challenge their growing intellects and their sympathetic understandings. If they are left to the leadership of a teacher who has no conception of the possibilities of the subject, there is a waste of equipment, a waste of teacher energy, and a waste of pupil opportunity.

It is rather significant that the request for a detailed course of study is much more insistent among the trained teachers than among the untrained. In this age where results are being measured with more definiteness, it is to be expected that geography teachers see the need

of specific objectives and accomplishments being indicated for the different levels of instruction. As one teacher noted, "If only I might know what had been the foundation laid in the previous grade!"—a desire that seems only just to the teachers in both grades and to the children.

In total numbers the largest request is for supplementary geographical reading material. Reasons for this are probably several. Teachers may be realizing that the all-inclusiveness which has been the traditional demand made on geography textbooks necessarily limits them to generalizations on many of the places they are expected to mention. The request may be related to a need felt by the teachers for specific detailed material to support abstractions that children have difficulty in grasping. It may be an outgrowth of the custom of children from the primary grade on to do their reading in numerous books.

While the data in Tables II and III permit no final conclusions they do furnish thought for study and suggest further investigation.

4. Recommendations

Since college teachers of geography recognize that most students come to beginning classes lacking the most fundamental facts and principles of geography, unable to read maps and utterly untrained in thinking geographically, and since it seems logical to lay a part of this lack to untrained teachers, a remediable evil, it would seem advisable to set up some standards. Therefore, we suggest:

1. That superintendents be urged to require of teachers who are teaching geography in their regular grade work, as a minimum of college preparation in geography, the equivalent of an introductory course, a regional course, and a course in technique—the three courses totaling not less than 180 clock hours of college work in geography.
2. That a minimum of preparation for those who are teaching geography as departmental work (this includes those who teach it as a part of a social-science course) be 270 clock hours, with the constants as previously listed; and that where departmental teachers are four-year college graduates, they be those who have taken a major or a minor in geography.
3. That in normal-training high schools preparing teachers to work in rural schools, where geography is always one of the subjects

taught, the geography offered be taught by a teacher who has had at least the minimum training in subjects suggested in 1.

4. That superintendents finding teachers in service who have not had the minimum of training in geography should see that the deficiency be made up by the completion of college courses given by a properly qualified geography instructor—not by any instructor. For convenience such work may be done by attendance at summer schools or by extension courses.
5. That courses of study in geography for the elementary and the junior high schools be set up by persons who are versed both in curriculum-making and in geography.
6. That a wider range of supplementary reading be provided.

IV. THE RELATION OF ELEMENTARY- AND SECONDARY-SCHOOL CURRICULA TO COLLEGE CURRICULA

1. Point of View

There can be no bond between college courses and the elementary and secondary curricula unless they share a common point of view. Modern geography stresses the relationships between man's activities and the various factors of his natural environment. These relationships only help explain certain economic developments that occur in a given region. Thus, an understanding of certain political, economic, social, and religious factors may contribute much to the understanding of the economic situation. These relationships should not be ignored. The main emphasis, however, is on man's utilization of the earth. Thus, the geographic interpretation of the human occupancy of an area involves an analysis of the ways in which his occupancy is helped or hindered by the natural environment. The interpretation also must recognize the fact that a given use of land, such as its use for crop production, in turn may stimulate other activities, such as the building and operation of elevators, mills, food factories, railroads, and a variety of other institutions and agencies, and at the same time give rise to economic, social, and political problems.

Mere mention of this point of view at the beginning of a course or curriculum is not sufficient. It must permeate the entire subject matter presented. College-trained geography teachers have a right to expect to find this view in the curricula they are to teach, just as superintendents have a right to expect their teachers to be trained to teach geography from the modern point of view.

2. Content

Elementary-school and high-school curricula do not, themselves, furnish the content for the pupils; the texts, adapted to the various grade levels, are the chief source material for this content, supplemented by maps, readers, and other geographical publications. The function of the curriculum is to serve as a guide for the teachers, stating the desirable objectives and skills sought for each grade, giving at least one outline of a unit of work to be covered within a specified time, and suggesting aids by which to attain the objectives.

Similarly, the curricula are not to be the core of any college course. The units in college courses may deal with some of the same units found in the elementary and secondary curricula, but they should be taught on a college level. The enrichment of material beyond the grade-school level that is afforded by college courses in geography is as significant to the elementary teacher as the reserve power of a modern automobile engine that can be drawn upon in emergencies. Such reserve power is not in the elementary-school curricula; its source is in the content of college courses, taught on a college level.

3. Opportunity for Individual Judgment

Curricula-makers cannot make a curriculum that will meet every teacher's needs. All they can hope to do is to present enough suggestions of the types of materials to be used and enough ways of organizing that material so that the teachers may select whatever materials and whatever organization thereof best meets their particular needs. Ability on the part of the teachers to make this selection should have been acquired in the college courses. Thus, teachers of college courses should provide opportunity for their students to organize a unit of work, evolve a method of presenting it effectively to their own classmates, and aptly illustrate it with materials of their own choosing. Thus, both college courses and curricula should afford opportunity for the exercise of individual judgment.

4. Points of Contact

College students expecting to teach geography should have the opportunity of becoming familiar with the curriculum that is likely to be their guide. Their first contact with the curriculum can perhaps best come in a regional course. In regional college courses the units of work are similar to those appearing in the regional outlines that

are included in the elementary and secondary curricula. However, the appreciation of the curriculum as a whole should come in the college methods class that should top all other courses in geography. The actual adaptation of this work to a grade-school level should come in the teaching units presented in the training school of the teachers college.

5. Basis of the Foregoing Opinions

These opinions about the relation that should exist between the college courses and the elementary and secondary curricula are based upon an interpretation of the answers to a questionnaire on this subject sent to the geography instructors of our teachers colleges. Only a few instructors advocated the use of the curriculum as a college text; most of them favored teaching geography on a college level and placing the use of the curriculum itself in the college methods course.

Throughout this paper it is understood that the curricula are written by teachers with modern training in geography and are adapted to the various grade levels by those familiar with the abilities of children at those levels. It is also assumed that the college courses are taught by teachers who have done successful graduate work in the field of geography as presented in our leading colleges and universities. On the basis of that understanding, then, the relation between college courses and school curricula is evident in their common point of view, their common core content, and in the opportunity they both afford for the exercise of individual judgment. These relations between the two can become effective if prospective geography teachers are afforded an opportunity to appraise the curricula in their regional and methods courses in college geography and adapt them to grade-school levels in their practice teaching.

V. THE TEACHERS-COLLEGE CURRICULUM IN GEOGRAPHY¹

1. The Objective

The training of teachers and supervisors for the elementary and secondary schools is the real function of our normal schools and teachers colleges. That is the purpose for which they were established and for which they are maintained, and is the purpose adhered to

¹The reader may consult the report by Cunningham, in Chapter XXXI, on "The Present Status of Geography in Teacher-Training Institutions."—*Editor*.

in the preparation of this report. Any other functions that may be assumed by a particular institution are considered local and hence disregarded. The teachers-college course should give training that will enable the geography teacher to think and act for himself in terms of geographical and educational material in their relation to any course of study presented to him in a given school; that is, ability to do constructive work independently rather than mere skill in parrot-like repetition of what he may have been taught to do. Negatively, we are convinced that his training should not be that of a vocational job seeker to practice a particular course of study in a particular way.

2. The Training

The training of geography teachers may be considered three-fold. First, as geography teachers and supervisors; second, training in geography as a contribution to the social studies curricula; third, for breadth of view as teachers of young people. The last may be classed as part of a general education, since we believe that knowledge of the world in which people live is basic in all good teaching.

Student-teaching is another essential factor in the education of a geography teacher. This should provide an opportunity to make practical application of the facts and principles acquired in the departments of geography and of education. Data at hand show little coördination of the student-teaching and the academic departments of teachers colleges. In approximately 60 percent there is no coöperation whatever; in 25 percent there is some that is more or less desultory; and in only 15 percent is there close coördination. This condition is probably due to lack of available instructor time and to difficulties of administration, rather than to the indifference of either geography instructors or practice-school supervisors. The geography department should be able to coöperate effectively (1) in the preparation of the course of study in geography for the practice school, (2) in the selection of student teachers of geography, (3) in the preparation of teaching units, (4) in the selection and use of teaching materials, (5) in determining the point of view, objectives, and skills to be attained, (6) in preparation of test materials, and (7) by suggestions arising from observation of student teachers. Such coöperation would tend to be mutually beneficial to student teacher, supervisor, and the geography department. It would tend also to produce far better geography

teachers. Some teachers colleges have done much to solve the problem by employing a really properly qualified geography supervisor who coöperates with the geography department. In many others the geography critic teacher has had no more training in geography than have the children she teaches, and hence, not nearly as much as the student teacher she supervises. Frequently capable student teachers are required to teach selected facts as geography that bear no relation to the subject.

Modern geography utilizes material from many fields of human knowledge. Hence, the properly qualified geography teacher must round out his course of training from several allied fields, such as history, economics, sociology, geology, meteorology, and biology. Ordinarily, the introductory courses in these subjects will provide the broad survey needed. This is in addition to the essential professional training in psychology and education.

Elsewhere in this Yearbook are presented the specific objectives, habits, and skills to be attained through the study of geography at pre-college levels. They need not be repeated here. They differ in a teacher-training institution only in the degree of attainment expected of a teacher in contrast with that expected of a child.

3. Making a Curriculum

a. Ideal vs. Practical. There is a marked difference between the theoretically ideal geography curriculum and the practical one. In practice the curriculum-maker is confronted and hedged by many restrictions that are due in part to local conditions and in part to the present stage of educational evolution in the United States. This may be illustrated by the fact that nearly every teachers college has to provide at least two-year and four-year curricula and by the inescapable reality that most teachers in the elementary schools are required to teach several subjects. The internal organization of teachers colleges is so varied that it is not possible to prepare a curriculum for each variable. Instead, a basal curriculum that may be modified to meet local requirements appears to be the most desirable type to set up. We hold that there is no *one* method or curriculum for the training of geography teachers that should be followed to the exclusion of all others. We are convinced that excellent training may be secured by various curricula and methods. It seems undesirable to outline details of a curriculum, but desirable to set up certain broad selections and

standards. Details by which desired results may be secured should be left to the instructor. He should retain the widest possible latitude in the selection of details of subject matter, in methods, and in adaptation of the suggested curriculum to local needs.

b. Principles of Construction. The first step in making a geography curriculum is the setting up of the principles upon which it is to be constructed. These may be stated as follows:

First, the course of training must provide knowledge of the subject matter adequate to enable the teacher to think geographically, especially that subject matter most useful to the elementary-school and secondary-school teacher. Inadequate knowledge of subject matter is probably the greatest cause of failure among geography teachers. Provision for such preparation is of vital importance because entering students have received essentially no pre-college training in geography, and because there is no substitute for knowledge. It is axiomatic that a teacher cannot teach what he does not know, although thousands of teachers are now working under such a handicap. In this connection we wish to make it clear that we do not consider that it is the function of a teachers college to prepare research specialists in the science of geography.

Second, the course should provide for continuity of study in core material.

Third, it should provide knowledge of source material and training in its use. This includes field studies as well as printed matter.

Fourth, it should provide training in the organization and presentation of geographical material in the elementary and secondary schools.

Fifth, it should provide training in educational theory that will enable the teacher to adapt geographic materials so that they will contribute most effectively in training children to meet the problems confronting them as members of organized society.

c. The Core Subject Matter. In harmony with the preceding principles the geographic subject matter of any curriculum should contain as its core (1) an introductory course in the fundamental elements of human geography that establishes a basis for all further study and geographic interpretation, and provides the point of view of modern geography; (2) regional courses that provide an application of the principles developed in the introductory course and give training in a variety of ways of organizing the geographic materials of an area; (3) world-view courses that widen the horizon of the student to include

the interdependence of nations in the present-day world; and (4) a technique course that will enable the student to use geographical materials effectively in his teaching.

d. Making Principles Effective. To carry out the principles set forth as basic in formulating a geography curriculum requires no radical change in the material now offered in our teachers colleges. The most important changes needed are in administration; viz., a minimal requirement that will include the organizing core of a sound training course. This will give a continuity to geographical study that is now almost wholly lacking. In this respect our work is inferior to that given in many European countries.

The *introductory course* is almost universal in our teacher-training institutions. Though it appears under a great variety of titles it is intended to serve a similar purpose. Any needed change in emphasis may be given, as a sequence of courses is established. Regional studies—for example, continents—are probably of greatest direct aid to the largest number of teachers, particularly those who teach in elementary schools. Continental courses may be supplemented by more detailed studies of political units, natural or geographic regions, portions of continents, such as Middle America and the Far East, etc.

Cross section courses, i.e., those that involve a world view and contribute to a knowledge of many regions and show regional interdependence, are presented under numerous titles, such as Industrial and Commercial Geography, Geography of Commercial Products, Climate and Man, Historical Geography, Geography of World Problems, etc.

Technique courses should deal with the distinctive technique or organization and presentation of geographic subject matter and the use of geographic materials. Such a course should be the capstone in the training of a geography teacher; it should summarize and expand phases of teaching presented more or less fragmentarily in each of the subject matter courses, deal with the problems of supervision, clarify problems of teaching peculiar to geography, and weld the curriculum into a concrete whole. Courses of this sort that do not deal chiefly with devices or educational theory are rare. Too often these courses contain a minimum of substance distinctly geographic and a maximum taken from the department of education, and are given before the student has had sufficient preparation in geographic subject matter.

e. Minimal Requirements. A teachers-college curriculum in geography should give to teachers for the elementary and secondary schools

a preparation at least comparable to the preparation provided in other subjects. Very few students upon entering college have had any geography whatever since they were children in the grades. Only a few have had a half-year of physical geography or a half-year of commercial geography. Rarely have entering students had both of these courses in the high school. Investigation shows that nearly all of the high-school work in geography was done by untrained teachers who were unfortunate enough to have a vacant hour in their schedule. Since the great majority of teachers-college graduates must use geographic material directly or indirectly in their work as teachers, a large measure of responsibility rests upon teacher-training colleges not only in the preparation of geography teachers but also in laying a suitable foundation for teaching the social studies. We believe, therefore, that we are very modest in recommending a minimal requirement of one and one-half year's work in geography for all grade and high-school teachers who teach the subject or who teach the social studies. In colleges operating on the 'quarter' system, the requirement of one and one-third years is probably the more convenient administrative unit.

4. A Type Curriculum

In the preceding statements we have endeavored both to set forth conditions that must be met and also to establish basal principles for building a curriculum for the preparation of capable geography teachers. At bottom both the principles and the curriculum rest on personal judgments rather than on established facts. It is our judgment that all work should be on a college level, should provide a basic core for further geographic study, should provide continuity of study, should be professionalized, and should be so arranged that the essential elements of a sound training may be secured in a two-year course and yet establish a coherent unit for majors or minors in a four-year course with a minimum of loss to the student who changes from the former to the latter.

The exact title given to a course is of little importance compared to its contents. These should be determined chiefly by the instructor, so that locally felt needs may be satisfied properly. Comments accompanying courses in the type curriculum that follows are intended only as suggestions indicating the general trend or emphasis that should be given to meet the apparent needs in the country as a whole, and to comply with the principles already set forth; the comments also

indicate reasons for the distribution of courses in the four-year curriculum. The particular year in which many of the courses are given is of secondary importance, since the content must, of necessity, be adapted to the position of the course in an orderly sequence.

Time allotments must likewise be adjusted to the administrative scheme followed in a particular institution. For this reason subjects are listed by name only. In colleges operating on the quarter system they are likely to retain names similar to those listed and each course will probably have a time allotment of four periods weekly. On the semester basis a year's continuity of study might readily be established by covering three of the four core subjects without any change in title. The core subjects should have an allotment of at least 192 clock-hours; a major, a total of 432 clock-hours, or at least three years, and a minor, a total of 240 clock-hours. The term 'clock-hour' is used to indicate a class period of 50 to 55 minutes.

What follows, then, is submitted as a type curriculum in which a student may secure the core subjects, but from which there may be many variations. It is assumed that each student will make a selection from each year that will contribute best to the particular field of teaching that he is to enter. It is not assumed that all teachers colleges will offer all the courses listed or that any one student will take all of them in an undergraduate course.

FIRST YEAR

Elements of Geography: A prerequisite to all others.

North America (North of Mexico): If only one regional course is taken the first year, it should be North America.

Middle and South America (Latin America): (Note: All regional courses should apply the principles developed in the introductory course, give adequate knowledge of the region studied, and training in various methods of selecting, evaluating, and organizing geographic materials in a regional study, thus aiding the student to continue effectively further study independently. This treatment assumes special importance because the average grade teacher and the student who minors in geography may secure only one such course.

SECOND YEAR

Europe: This is considered second in importance to North America, but its geography is more complex than either of the first-year regional courses. However, it could follow North America in the first year.

Economic Geography (Commercial and Industrial, Commercial Products, etc.): This gives excellent opportunity for the first world view and a study of interdependence, and contributes effectively to the social studies.

Geography of the State: A limited study that meets local requirements, shows interdependence with other regions, and may develop the principles of regional study.

Africa, Australia, and Pacific Islands: This course is of minimal value to most teachers.

THIRD YEAR

Teaching Geography: This should be the capstone of a geography teacher's training. However it is placed here so that it may be taken by second-year, third-year, and fourth-year students who have had three courses in geography and yet meet the crediting requirements of various college standardizing agencies.

Asia: As a regional study this is third in complexity to North America and Europe. The scattered character of good material requires thorough previous training if a worth-while regional study is to result. The scattered character of that material also gives an excellent opportunity to apply the principles of regional study previously developed.

Conservation of Natural Resources: This course treats primarily the United States and secondarily world resources and their exploitation.

Historical Geography: Deals primarily with the United States and associated world relations. As such it contributes directly to the social studies.

FOURTH YEAR

Geography of World Problems: This is a geographic interpretation of the complex economic, political, and social problems that confront the leading nations of the world in their domestic and international affairs. Broad generalizations should be possible from the study. It requires a broad knowledge of geography and of the social studies and hence is placed in the fourth year.

Climate and Man (Climatology): Emphasis is placed upon man's adjustment to the climatic regions of the world and involves interpretation of climatic and other environmental data and the formation of generalizations. Hence a broad geographical training as a general foundation is essential.

Field Studies: This is an application of previous training by individuals or groups of students to the systematic study of some area. The course is distinct from, and is not to be confused with, 'field trips' given in connection with other courses.

5. SUMMARY

The great majority of grade teachers and many in high schools must teach geography, and a geographic training contributes basically to teaching the social studies. Most students entering teachers colleges have had no training in geography since they were children in the

grades. Responsibility for giving teachers training in geography comparable to that given in other subjects rests upon our teachers colleges. The discrepancy that now exists must be corrected if geography is to make its distinctive and essential contribution to education. This cannot be done with untrained teachers.

The minimal training should consist of not less than one and a half years of geographic study. The core of such a study should consist of (1) an introductory course that lays a sound foundation for all further study, (2) a regional course that develops the skill to select and organize geographic data pertinent to a region, (3) a world course that gives knowledge of many regions and their interdependence and develops interpretive power, and (4) a technique course that trains in effective organization and use of geographic materials as educative tools. To attain these ends few radical changes are required in either the administration or the courses now offered in our teacher-training institutions. The essential need is an appreciation by administrators of (1) the importance of geographic knowledge of the world in which we live and its significance in the solution of economic, political, and social problems, (2) the distinctive contribution to the education of our youth that is inherent in geography, and (3) the need of placing geography on an equal basis with other subjects, with due regard to amount of pre-college training. All geography teachers ask is an equal opportunity to make geography teaching effective.

VI. THE TRAINING OF GEOGRAPHY TEACHERS IN UNIVERSITIES AND LIBERAL-ARTS COLLEGES

1. The General Problem

The formulation of a training course in universities and liberal-arts colleges to prepare teachers of geography for teachers colleges and high schools is considered as being fundamentally a problem in job analysis. Accordingly, the recommendations that follow are based (1) on data indicating directly or indirectly the kinds of training needed for successful teaching, (2) on studies of the geography curricula of teachers colleges and high schools, including hitherto unpublished recommendations of this subcommittee, and (3) on statements by teachers-in-service evaluating their own university training as a preparation for the work they are doing.

This problem of determining a satisfactory university curriculum for the training of instructors to fill positions in teachers colleges is

simplified by the fact that the teachers-college curriculum in geography is now clearly defined and expressed in commonly recognized units of study. In the preceding section on "The Teachers College Curriculum in Geography," these units of study have been presented, together with the principles governing their selection. Although an unattained ideal for many colleges, this program represents the actual practice in those institutions where thorough adequate training in geography is being given. Clearly, if this curriculum is to function effectively, the instructors in charge of it must be trained to move with freedom over a field of geographic subject matter much wider than that which they are expected to present to their own students. Otherwise, they can hardly exercise sound judgment in selecting the content of the courses they are to teach. The university course of study must, therefore, be far more comprehensive than that followed in the teachers college.

As a check against this approach to the problem of training the college teacher, a study was made of the answers to two questions submitted to instructors in teachers colleges the country over: (1) What university courses have proved of greatest worth in preparing you for your work? (2) What deficiencies in your formal training have become evident as you have taught? The conclusions from this study checked very closely with those drawn from the direct study of the geography curricula of teachers colleges.

2. Recommendations

In stating the conclusions of this subcommittee, it is convenient to reckon credits in terms of clock-hours and to make certain assumptions regarding the length of time spent in university study. If it be assumed that the prospective teacher spends two years in graduate work—the minimum now required of instructors in colleges of high standing—and that the graduate work is preceded by adequate undergraduate preparation in the subject, the program of studies will consist of at least 864 clock-hours of geography and 288 clock-hours of graduate work in allied fields (allowing one-third of the graduate work to be taken in related fields).¹

¹The minimal undergraduate work in geography is here evaluated as the equivalent of 6 courses, each meeting 4 times a week for 12 weeks. This is but two-thirds of the work prerequisite to graduate study in most universities. It is further assumed that as a graduate the student receives 12 clock-hours' credit for each of 72 weeks.

Within these time limits, it is desirable to provide some freedom of choice, thereby harmonizing the curriculum with differences in the interests and qualifications of prospective college teachers and of their university instructors. The customary course titles are used in the accompanying table.

3. A Type Curriculum

COURSES IN GEOGRAPHY

	CLOCK HOURS
Elements of Geography.....	48 to 96
Economic Geography	
General Course	48
Advanced course, selected from.....	48
a. Agricultural Geography	
b. Industrial Geography	
c. Commercial Geography	
North America	
General course	48
Advanced study, selected from.....	96
a. Historical Geography of United States	
b. Conservation of Natural Resources	
c. Research or seminar in regional geography of North America	
d. Geography of a state	
Europe	
Elementary course	48
Advanced course or Research or Seminar.....	48
Latin America	
General course	48
Advanced course or Research or Seminar.....	48
Asia	
Elementary course	48
(Advanced course, substitute for advanced work in Latin America)	
Africa and Australia	
General course	48 or 96
Intensive field work	48
Extensive field work	48 or 96
Methods of Geography Teaching.....	48 or 96
Cartography	48
Meteorology	48
Climatology	48
Total	864 or 1056

COURSE WORK IN ALLIED DEPARTMENTS

Physiography of the United States.....	48-96
Plant Ecology or Geography.....	48
Soils.....	48
Economic Geology.....	0-48
Political Economy.....	0-48
Economic Theory.....	48-96
Economic History (United States or Europe).....	48
Practice Teaching.....	48-96

Total 288-528

VII. THE COURSE OF STUDY FOR HIGH-SCHOOL TEACHERS

The training of high-school teachers presents a different problem. In general the work in geography in liberal-arts colleges is pitifully meager. Accordingly, it is advised (1) that the geography curriculum consist in large part of world-wide surveys, and (2) that the student be advised to give particular attention to the work of allied departments. The minimal requirements in geography are held by this subcommittee to be as follows:

COURSE	CLOCK HOURS
Elements of Geography (Natural Environment).....	48-96
Economic Geography (World Survey).....	48
Regional Geography of North America.....	48
Methods of Teaching Practice.....	48

(Note: If more work is available, the more elementary courses in the preceding table should be undertaken.)

Unfortunately, only a very small percentage of the liberal-arts colleges and universities of this country offer even the minimal essentials of such a teacher-training program. In general the school administrator must go to the teachers colleges and to such universities as have effectively staffed departments of geography to secure adequately trained geography teachers for high-school positions.

CHAPTER XXIV

MATERIALS FOR VISUAL INSTRUCTION IN GEOGRAPHY

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I. THE PICTURE AS A VISUAL AID IN GEOGRAPHY

1. Basic Reasons for Using Pictures

Five reasons may be cited for using pictures when teaching geography.

1. Pupils require accurate imagery to aid in the formation of the ideas needed for geographic thinking.

2. Pupils require numerous ideas of regions beyond their experience. They must have clear concepts concerning both human adjustments and environmental conditions.

3. The picture is a valuable source of ideas concerning a region. If properly selected, it contributes to the imagery and understandings needed in geographic interpretation.

4. The picture is the best substitute for the actual landscape where human activity is shown in its natural setting.

5. The picture is an original source for obtaining geographic ideas. If properly used it is an economy in effort and time.

2. The Mechanical Forms of the Picture

Common pictorial forms include (a) the sketch and the painting, (b) the photographic print, (c) the half-tone and the engraving, (d) the stereograph, and (e) the projected picture—lantern slide, motion picture, film slide.

The most widely used pictorial forms are based upon original photographs. Photographs may be made into the print, the slide, or other reproduction for class use. The photograph is a unique instructional tool that may vary from a snapshot to a carefully planned photograph of the landscape from the air or ground level. Each of these brings to the geography student useful and original material. The mechanical form of the picture that is to be employed depends upon the size of the class, the cost of the picture, and the instructional objectives that are sought. The stereograph introduces depth and dimensions by the use of two pictures taken at slightly different angles. The stereograph is for individual study and the photographic print in its projected form, the lantern slide, lends itself to group instruction.

The 35-mm. motion picture brings action and even sound (attachments may be procured) into the classroom. The value of the sound movie is not fully established, and its cost is prohibitive as a general classroom tool. The narrow-gauge, or 16-mm., film is lower in cost and more suitable for classroom use, though the picture quality is somewhat reduced as well.

3. Kinds of Pictures as to Geographical Content and Use

The picture selected must give to the pupil clear imagery for geographical thinking. To understand the relationship of man to his environment, it is necessary to visualize clearly the 'geographic personality' of a region. Pictures should contribute to the understanding of geographic personalities. A few students may visit a place and become acquainted with it at first hand, but most school children will be obliged to obtain their ideas from pictures and descriptions. The picture furnishes the pupil a valuable vicarious experience. Its selection and use is a key to progress in modern geographical instruction. The most notable advance in geography education in the last decade has been the recognition of the picture as an essential part of the text and of class instruction. Future progress in geographical instruction is closely related to the wise selection and skillful use of pictorial material. This selection cannot be emphasized too strongly. A picture well selected must contain items to illustrate the point under discussion and should show but little else. Careful elimination of pictures or parts of pictures that are of relatively little value tends to maintain high standards and brings results far superior to those obtained from haphazard collections.

Advertisers have long since learned the value of attractiveness in pictures. Pictures are ruined by poor printing that not only destroys their attractiveness but makes it impossible to read the details in the picture.

Attractive, significant pictures of high quality that picture truthfully the conditions being studied are the ones best suited for geographical instruction.

Pictures with highest geographic quality are those that show human activity in its natural setting. Such pictures suggest geographic relationships and furnish material for geographic thinking. Pictures that show cultural items alone or natural items alone may have value if they contribute to a better understanding of the facts needed for the interpretation of geographic relationships. Their use determines their geographic quality. Three classes of pictures for basic instruction are recognized as follows:

a. *Basic Geographic Pictures.* These pictures fulfill the requirement of geographical quality by showing the relationship of man to the environment. These are of two types: (a) pictures in which man is shown as actively at work in the environment, and (b) pictures in which no individuals appear but in which the results of man's adjustment to the environment are seen. These pictures become out of date as man's adjustments progress and new pictures are needed. It is obvious that, for basic instruction, pictures with a few ideas must be selected and clearness of illustration must be sought. Closeups must be chosen to bring concreteness and detail to the various elements of a broad landscape that are frequently too complex for the pupils.

b. *Landscape, or Environmental, Pictures.* This class deals entirely with the aspects of the landscape, without visible evidence of man or any cultural adjustments. These pictures are commonly landscapes that emphasize the environmental land forms. They have their chief value in providing ideas concerning the physical forms.

c. *Cultural Adjustment Pictures.* While the use man makes of his environment is of primary geographic importance, some pictures are entirely concerned with cultural items. These have value if they provide concepts essential to the understanding of geographic relationships. It is generally agreed that the 'closeups' of industrial processes and factory interiors have little geographic value. General views of buildings have small geographic significance.

4. Organization of Pictorial Aids

The organization and arrangement of pictorial aids for instruction depends upon the type of picture and its use. A picture collection, large or small, for a state, a city, or a school, must be organized to function. It must be clearly classified and indexed. It must be readily accessible.

The following characteristics should be exhibited by a working collection of photographs for classroom instruction: (1) The photographs should be chosen for their geographic qualities and photographic clearness. (2) They should be arranged in definite sets selected for pupils' use in connection with the various units in the course of study. (3) Each set of pictures should be selected and arranged to provide the pupils with definite things to do. (4) Each set, through pupil activity, should be contributing to worthwhile geographic understandings. (5) Each of the separate pictures should be part of a clear continuity of thought in the unit. (6) Each picture, on its reverse side, should have (a) clear information about its contents, (b) definite search questions of geographic value that require observation of the details of the picture, (c) cross references to other pictures in the unit, and (d) references to texts. A small working vocabulary for the simpler pictures is useful. The pupil should be able to identify all words of the vocabulary in the picture before relationships are studied.

Many uses may be made of picture sets in (a) the introduction to a unit study, (b) individual class work, (c) special reports to the class, (d) comparative studies, and (e) check tests.

To make a set of pictures most effective certain mechanical details must be given careful attention. It has been found that the size most suitable for classroom use is 8" x 10", mounted upon dark gray 10-ply tag board, 9" x 12". Photographs are preferred and these had best be mounted by an electric hotpress using a wax tissue as an adhesive. This type of mounting prevents warping. Pictures have a longer life when the heavy dark colored mount is used.

The caption and filing code should be on the reverse side and in the upper right corner. This makes it very easy to check and to file.

All the unit sets of mounted pictures should be filed and should be readily available. Teachers will use a picture collection that is indexed properly, filed, and integrated with the course of study. Such a working collection will gradually become of importance if all the unit sets are well mounted and closely adjusted to the units of in-

struction. If original photographs cannot be procured, then use half-tone reproductions. A growing picture collection is essential to all phases of geography instruction.

5. The Relation of Pictures to the Geography Curriculum

The present haphazard relationship between the course of study and the pictorial aids is a general weakness in geography instruction. Some school systems have purchased pictures that are only remotely related to the units of instruction. In many cities and states there is only a slight relationship between the authorized geography curriculum, the textbook, and the pictures used. In some localities the textbook is really the only organized course of study. It is true that a few of the most modern of our school texts in geography make a close correlation between the subject matter of the text and the pictures, yet many texts include pictures that are merely incidental, while the textual material and picture captions in most cases call for no geographic interpretation of the pictorial features.

The pictures should be integral parts of each of the different units of instruction. In fact, the instruction may often be better if the picture is the organizing center from which emerge the facts, the questions, and the problems of geographical relationship.

The modern geography curriculum should prescribe the pictorial aids to be used. These pictures should be provided for class use on the same basis as the map or the textbook.

6. Using Geographical Pictures

The picture is a tool of instruction that requires skill in its use. The failure to use the picture skillfully is a too common practice in the classroom, and many of the geographical textbooks are examples of inferior picture technique. Some of the uses of pictorial aids are suggested as follows:

a. Pretesting. Pictures skillfully used will reveal to the teacher the information and the pupils' understanding of the new units. A picture pretest gives some diagnostic data upon which the teacher can base a procedure of instruction.

b. Introducing Ideas. Pictures give clear ideas about which can be built the formal definitions and terminology that are necessary in geography.

c. Building Initial Concepts. The experienced teacher realizes the difficulties of introducing concepts of a new region. Word descriptions are not satisfactory unless accompanied by interesting and stimulating pictures that give the pupil ideas that will serve as an adequate basis for the future understanding of the why of the geographical relationships. So important are the pictorial aids in the initial lesson stage that a teacher promotes the accuracy of instruction by their use.

d. Interpreting Geographic Relationships. Pictorial aids provide observations and hence a basis for analyzing geographical relationships. Vicarious observations are important if they provide definite material for the problems involved in the solution of geographical relationships.

e. Contrasting Human Adjustments. Pictorial aids provide the material for definite comparisons of the landscapes of different areas and the different cultural adjustments.

f. Final Testing and Checking. Picture testing is a valuable and reliable method of reviewing the understanding that a student has gained of a geographical problem. Recognizing human activities and signs of such activities and recognizing the items of the natural environment that help explain these activities are worth while geographically. Ability to make such recognitions can be successfully checked through the use of well chosen pictures.

II. THE LANTERN SLIDE IN GEOGRAPHIC INSTRUCTION

1. Utility of the Lantern Slide

The advantage of the lantern slide is that it places before a class an enlarged picture that can be clearly seen and upon which the interest of all the pupils is focused. In addition, it is obvious that all of the geographical values of a picture are likewise applicable to the lantern slide. These paragraphs are added because the slide is a geographical tool of basic importance in class instruction and therefore should receive attention from those who determine geographical instruction.

2. The Projection Apparatus

The lantern slide is used to project a picture. It is essential that the projection apparatus be a permanent part of the room in which geographic instruction is given. The lantern and the screen must be so placed in the semi-darkened room as to produce a clear picture on

the screen. There should be no make-shift in the projector or in the screen, which should be securely fastened on the wall in the front of the room. The teacher should master the technique of projection and insist upon the equipment that is necessary for the adequate projection of the picture.

3. Methods of Using the Lantern Slide

The lantern slide is a geographical tool unexcelled for class instruction if the pictures are chosen and used with high standard of technique. The lecture method of instruction has been replaced by the use of a few selected slides about which center the basic activities of the lesson. Unless the teacher has developed the technique of using a few slides for careful observation, the benefit of the lantern slide may be entirely lost. The use of too many slides in a single lesson period is an inferior method of instructing pupils in the reading of geographical pictures for worthwhile understandings in geography. The slide is a picture that is to be used indirectly, and the pupil is to be taught how to obtain facts from it. The visual introduction to a lesson, the step-by-step investigation of a geographical region, and the check of the geographical understandings of a class are a few of the uses of slides now in practice.

4. Standards for Lantern Slides

It is essential that lantern slides used for geographical instruction be of such a quality that they are effective in the classroom activity of the pupils. Too little attention has been given to those qualities of lantern slides. The following ideas relative to lantern slide standards have been condensed from the many articles of Mr. Alfred W. Abrams, Director of Visual Instruction, State Education Department, Albany, New York.

a. Truthfulness. The value of the lantern slide depends upon its truthful presentation of the geographic situation. This value is basic to geographic instruction. Drawings and sketches frequently present entirely erroneous pictures of a land, and such material should be checked before its inclusion in instructional materials. A geographic picture may be out of date and hence not present a truthful statement of the present geographic situation. Man is constantly making adjustments to the geographic environment and hence the picture to be used must portray the present situation.

b. Authenticity. A geographic picture must be accompanied by authentic records that indicate where and when it was taken. Otherwise the value of the picture for the interpretation of geographic relationship is lessened. It increases the value of the picture if a statement is made of those characteristics of the picture that only words can indicate.

c. Quality. The objective facts of each picture must be presented clearly. Clearness of presentation in pictorial aids in geographical instruction is an essential standard. The quality varies, not only the clearness with which the picture presents its material but the amount of material presented and its arrangement. The lantern slide that is out of focus, spotted, fogged, etc., is not to be entirely eliminated, however, from any lantern-slide collection for geographic instruction.

d. Significance. Not all geographic picture facts are of equal importance. There must be a selection of those pictures that are significant in emphasizing the geographic relationships the class are studying. It is comparatively easy to get together pictures of a country that are not significant, that give but little hint as to geographic relationships. Industrial pictures have been widely used, but they do not commonly contribute to the understanding of why man engages in the various industries, and thus contribute little to the pupils' understandings of the basic ideas of geography.

e. Attractiveness. A picture may have all the qualities that have been cited, but if it lacks attractiveness, it fails to interest a class. The scenes must be so photographed as to have pictorial merit. An attractive geographical picture will arouse interest and provide definite materials for class use.

III. THE MOTION PICTURE IN GEOGRAPHIC INSTRUCTION

The motion picture brings to the classroom a new type of illustrative material of value and interest to the teacher of geography. In the 16-mm. width the motion picture is cheap and readily used in the regular classroom. The geographer who is interested in advancing the standard of geographic study and instruction should give attention to the motion picture.

The use of the motion picture in geographic instruction is briefly summed up as follows:

1. Geography is preëminently a picture study of human adjustments to physical features; hence the value of the moving picture, which shows life in action.

2. The motion picture reproduces geographic items in action.

3. The activities of people from near or remote localities may be studied in an indoor field trip or in the laboratory.

4. Physical phenomena difficult to comprehend, when unseen, become vivid in the motion picture, as the flood, the volcano, the flow of lava, the eclipse, wave action, wind effects, etc.

5. In the study of clouds, snow, dew, fog, frost, storm, the actual phenomenon or its effect may be arranged for study.

6. Seasonal changes are shown in moving continuities from the flowering spring, the hot summer, the harvest autumn, to the snowy winter.

7. Map construction and use is real and vital in the animated map; thus, in war time the motion picture taught the construction and reading of contour maps.

8. The motion picture animates the map, the sketch, and the block diagram which makes clear each stage of form development.

9. In regional geography, the many human adjustments to physical conditions may be collected for comparison.

10. A geographer may present local geographical studies in motion pictures made by himself in the field—a record more exact than words or still pictures.

11. The reproduction of animals and plants in natural colors with natural action in their physical environment affords a new and effective tool in modern geographical studies.

12. Animal activities are best observed, recorded, and presented in motion pictures.

13. Mining, lumbering, farming, or manufacturing are depicted in a moving continuity.

14. Transportation in its various phases in modern life, from the fastest express to the human pack carrier, may be shown and studied in all the details.

15. The modern motion picture, printed on non-inflammable film, is safe in any laboratory or schoolroom without fire booths.

16. The modern motion-picture projector is inexpensive and easy to operate. Pictures may be stopped for discussion when necessary.

17. The modern motion picture contains 400 feet, costs from \$20 to \$35, and runs 16 minutes.

18. The modern motion picture is purchased outright, made available to pupils as readily as the library books.

19. To the geography class for investigation, for record and for instruction, the motion picture is a new tool that affords some unusual advantages.

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CHAPTER XXV

MAPS AND MAP STANDARDS¹

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I. PURPOSE AND SCOPE OF THIS CHAPTER

This is an attempt to set up tentative standards for maps and their use in the study of geography. It is intended, first, as a general guide to map publishers, to superintendents who may be purchasing, and to teachers who may be requisitioning school maps; and second, as a general guide to supervisors and to teachers as to the methods to be used in teaching children to read good maps. It is thoroughly understood by this subcommittee that these first standards are tentative—because based upon opinion—and it is hoped that they may be revised as often as the results of reliable technical research indicate they should be. Very few such scientific investigations have yet been made.²

The field assigned to this subcommittee does not extend to maps used in the study of history, economics, or other subjects, although the same principles will undoubtedly apply to maps used in those subjects,

¹ The authors of this chapter operated as a subcommittee under the chairmanship of Acting President Eldridge. Their report, like those of other subcommittees in this volume, has been critically reviewed and endorsed by the Society's Yearbook Committee. The assistance is acknowledged of G. H. Burnham, cartographer of Clark University.—A. E. P.

² This subcommittee recommends that the reader consult David J. Swartz, *A Study of Variation in Certain Map Symbols*, published by Board of Education, 500 Park Avenue, New York City.

but it does naturally include all kinds of maps used in geography study, such as wall maps and globes, maps in textbooks and atlases, maps in actual relief, and maps in outline, maps on glass slides and on films; maps of any kind, in fact, that may be used in geography. Likewise, the field naturally includes the use of maps in all grades from kindergarten to university. With so large a field, the Subcommittee, however, has chosen to limit its activity and its recommendations at this time to wall maps and globes and to desk and base maps.

The following recommendations are made in the interests of the children in our schools. To the extent that these recommendations are followed, schools will require not only better, but more, maps. The idea that one set of eight maps will satisfy all requirements is quite absurd. It is folly for schools to economize on map material. Cheaper maps will undoubtedly be made, but the business of map publishers is bound to increase.

There never has been a time when Americans have been more aware of the need for good maps than they are right now. Although American map publishers are trying to be forward-looking, and to anticipate the demand; although they have made distinct improvement in the quality of their products within the past few years—particularly in the direction of legibility,—yet no considerable number of maps now on the market meet the standards about to be enumerated. Obviously the full potential values of maps cannot be secured until proper maps are supplied to the schools.

II. WALL MAPS

1. Their Purpose

The school map in general is a tool whose purpose is to help children to interpret those geographical relationships that may be shown with especial clearness and force in graphic form. Its use is most essential to a proper study of geography.

In the case of wall maps this Subcommittee, with the strong endorsement of the National Council of Geography Teachers, unanimously takes the following stand:

The character of wall maps is obviously dependent upon their use. In school, wall maps serve two purposes: (1) class instruction or class testing, and (2) individual or group project or reference study.

In 'class instruction' and 'class testing,' as we use these terms, the teacher's effort is directed toward having all members of the class

attend to a given thing at a given time. In class work wall maps have their more important and frequent use, and this fact must be kept in the foreground in considering what is to be represented and how it is to be shown.

For the very valuable individual and group activities associated with supervised study, not only wall maps, but also maps in textbooks and atlases should be available. In such activities textbook and atlas maps can frequently be used to better advantage than wall maps.

It must be borne in mind that the school wall map is distinctly a tool of the classroom. Seldom, if ever, will it be encountered outside the school. To reach the highest degree of usefulness in education, the map must be made for the child and adapted especially to the needs of the child.

Since, as has been indicated, wall maps in school geography are mainly for class use, every important detail must be clear and legible from a distance of twenty-five feet; *i.e.*, from the rear of an ordinary classroom. Until there is adequate research on the subject, the question as to what constitutes an important detail must be put squarely up to teachers and map editors to answer. Every map must be not only vivid and clear, but simple and attractive. The way in which many wall maps are burdened with needless or little-used detail is psychologically and pedagogically unsound. Primarily, wall maps must be made for class use.

2. General and Special Maps

There are two types of wall maps. There is the general-purpose map, as the map of North America or of New England. There is also the special-purpose map, as a map showing summer rainfall in Europe, population density in India, or an outline map of South America. The usual mistake made in preparing general-purpose maps is in attempting to have them show nearly everything that can be shown. Decidedly, this must not be done. General-purpose maps must not be burdened with details that might better be shown on the various special maps, but should be supplemented by such special maps when occasion may require.

3. Projections

Because the earth is approximately a sphere, it is only on the globe that we may have an accurate representation of shape, area, and direction. No flat map can possibly show all of these character-

istics without distortion, although by the use of lines of latitude and longitude direction may be read on any projection. Each projection, therefore, has its disadvantages and its limitations. Teachers must familiarize themselves with the most commonly used projections, with their advantages and their disadvantages.

For example: the Mercator projection has the advantage arising from an easy reading of directions, but the disadvantage of badly distorted continental shapes and of enormously expanded areas in higher latitudes. Further, the North and South Poles cannot be represented on this projection. It is of most value to mariners and aviators.

Other projections that should be well known are the simple conic; the polyconic; the Bonne; the sinusoidal, or Sanson-Flamsteed; the homolographic, or Mollweide; the interrupted homolographic; and the interrupted homolosine, the last two of which we owe to Dr. J. Paul Goode.

4. *Political versus Physical or Physical-Political Maps*

Most teachers distinguish between a 'political' and a 'physical' map. Of course, a map called 'political' always shows some physical features, even if the emphasis is on the political; and a map called 'physical' usually shows a good deal that is political or at least cultural. Twenty years or so ago one scarcely found in elementary schools any map that was not political. A 'map of Europe' meant a political map almost invariably; it would still mean that to many teachers. Map publishers have had hard work to convince the rank and file of teachers of the worth of the physical map. Because of lack of training in its use, most of them avoid it; but the 'physical-political' map, a relatively new development—a physical map on which political boundaries and other political facts have been superimposed—meets their objections half-way, and wins the support of forward-looking teachers and superintendents. The reason is plain: the old geography, which taught children to remember facts—mainly political facts—needed the political map; the new geography, which teaches children to think relationships, needs the physical-political map, which makes evident many of these relationships.

Therefore, although this subcommittee recognizes in the political map certain values, it favors strongly the purchase and general use of maps in which political features are subordinate to the physical.

5. Methods of Showing Relief

Among the ways of showing the relief of land on maps are (1) hachures, (2) hill-shading, (3) contours, (4) layer, or hypsometric coloring, (5) all or some of these four in combination. Each of these methods is specifically adapted to its own uses. The hachure method is quite commonly used in Europe to-day, and the 1 : 80,000 map of France is an excellent example of its use. The ten-mile and four-mile maps of Great Britain are examples of hill-shading. As is well known, the contour system has been adopted by the United States Geological Survey for the standard topographical map of our country. The layer, or hypsometric, system is the one that is used for the International Map of the World. It is also the one in most general favor for American school wall maps.

In an endeavor to aid in the visualization of relief, numerous combinations of the above methods are sometimes used. Contours and hachures, for example, are often effectively placed together, as are contours and hill-shading. Other combinations can be made, but in so doing one must be careful that the result really does improve the value and use of the map.

Careful study is needed in order that proper methods of representing relief may be used. Those methods that are most easily read—such as hill-shading—should be used in maps made for lower grades. Probably the hachure maps would rank next in order of difficulty, then the layer maps, and finally the contour maps. Much experimenting remains to be done in this direction, however, before the real difficulties of children in interpreting relief may be accurately determined.

6. Content of Wall Maps

Every effort should be made to keep the content of wall maps as simple as practicable. The ideal should be to have the map serve as the basis of understanding the relationship existing between two, and only two, sets of facts. Much of the psychological effect is lost through the crowding of too much information on one general map. This information would be much more easily interpreted and far more useful if it were shown on several special-purpose maps. The general use of special maps that show mineral products, climate, transportation lines, population density, and the like will prove to be of enormous advantage. Teachers of geography must come to recognize

that numbers of such special maps are necessary for effective teaching. In this respect textbook maps have been better developed than wall maps.

It is the belief of this subcommittee that much teaching and testing should be done with the aid of blackboard outline maps and of simple base maps—the latter in sizes suited to both wall and desk use—and that such maps, therefore, should form an important part of the equipment of the modern schoolroom. The same is true of unlettered maps, which should find a much larger field of usefulness than they ordinarily do. Since such maps are already offered by publishers, responsibility to provide them rests on school authorities. Responsibility to make full use of base maps, blackboard outlines, and unlettered maps, when they are provided, rests with the teacher. Failure to use at least some of this equipment is an indictment of her scholarship or of her methods, or both.

Maps must be graded. We believe that there should be a distinct difference between the kind and amount of information on a map of Europe for the fourth grade, and the kind and amount of information on a map of Europe for the seventh or the eighth grade. Several studies have already been made which may guide us somewhat in the selection of place names to be indicated. Among them may be mentioned the list of 1200 place names prepared by Dr. D. C. Ridgley. Further guidance may be obtained from some of the very widely used courses of study. In general, it may be said that names should be limited to key places, important rivers and mountains—important names of any kind—and that those not important should be omitted entirely. The decision as to what is important rests with teachers and with map authors and editors.¹

7. Use of Colors

The advice of color experts should be sought in order that we may avoid the lurid color combinations now found on some maps.

¹ Publishers of maps report that their willingness and desire to meet these proposals for simplification are often frustrated by purchasers of school maps who appraise the value of a map in terms of the number of names upon it or who refuse to purchase a map that omits the name of their own city. It is hoped that the straightforward recommendations made by the authors of this chapter will operate to reduce this obstacle to the manufacture and sale of pedagogically better maps.—*Editor*.

In representing relief the colors adopted for the International Map of the World should be consulted. On this map elevation of the land is shown by color layers in graded tints—blue for the sea, green for lowlands, and yellow, brown, and red for progressively higher altitudes. This general sequence of colors may well be followed in American color-layer maps.

Variations in the significance of colors should be kept at a minimum. There are cases, however, where some variation seems to be necessary. On a large-scale wall map, for example, it may be wise to use green for elevations between 0 and 500 feet, and on a small-scale map to use the same color for elevations between 0 and 1000 feet. If such variations are made only with due consideration for the pupils who are to read the maps, improvement over present conditions will result.

More use may well be made of inexpensive black-and-white or other one-tone maps. One-tone maps often may be made to tell their story very clearly and effectively. Many of the special-purpose maps might be produced in this form at small cost, and be very usable and satisfactory.

8. Insert Maps

The practice of using inset, or insert, maps in the main body of another map is thoroughly unsound and should be abolished. Such inserts merely confuse the minds of most children, and are usually not well understood. The areas they attempt to show might better be shown on separate maps. This restriction does not apply to supplementary maps, which may be placed below the main map, and which are so far separated from it as to be in effect distinct maps.

9. Devices for Improving the Legibility of Maps

We believe great improvement in maps would result from the adoption of the following suggestions:

a. Size and Scale. The map must be large enough and the scale great enough that the message of the map may be read from the rear of the classroom. More large-scale maps of small areas are much needed, particularly in the case of very important or critical areas. In the past, much difficulty has been caused by the practice of reducing the size of maps, without due regard for the effect on legibility. Often maps drawn for wall use have been reduced to textbook size with disastrous results. This practice should be abandoned, as such reductions are thoroughly unsuited to their new purposes.

In this connection, it may be observed that map slides offer great opportunity for the teacher to enlarge the map at will, and so to increase its legibility.

Margins may sometimes be made less, and the scale thus increased without any increase in the size of the map sheet.

b. Lines. All lines indicated, such as coasts, rivers, and boundaries, must be shown plainly. Lines should be crossed or superimposed only when unavoidable, and then with due regard to legibility. Lines of latitude (parallels) and longitude (meridians) must be clear and distinct. The Tropic of Cancer, the Tropic of Capricorn, the Arctic and Antarctic Circles, and the Equator should be heavier than the other lines of latitude.

Numerals indicating the degrees of latitude and longitude must be large enough to be read easily.

c. Legends. The legend, or key, must of course be legible in all respects. Any colors used in the key must correspond accurately with those used on the map. Sufficient difference in colors must be used that confusion in interpretation may be avoided. Scale in the legend should be indicated by a 'measuring stick.' On a small-scale map of a large area, of course, the scale will apply only to a particular part of the map, which will differ according to the projection used. Approximate distances north and south may be measured readily by noting differences in latitude, and figuring on the basis of seventy miles to a degree.

d. Names. Every effort should be made to avoid superimposing printed names on other symbols. To do so causes confusion that may often be avoided. Wherever possible, necessary names should be put only in spaces that would otherwise be clear. They should not be put upon colors that interfere greatly with legibility.

The practice of making the size of type proportional (roughly) to the population of the city is unsound. Size is not the only index of geographic importance, and, in any event, size may be indicated by symbol more appropriately than by type.

This Subcommittee notes, without making any recommendation, an apparently growing tendency among publishers to use local native spellings of geographic names. On some of the new maps of Europe, for example, we have 'Köln' instead of 'Cologne,' 'Napoli' instead of 'Naples,' 'Moska' instead of 'Moscow,' and so on. The use of such

spellings has been authorized by the United States Geographic Board and must be used in all government departments. On the other hand, in our current newspapers and periodicals, as well as in the great body of English literature, the English forms of such names are most commonly used. Probably the change to the native spellings will come about gradually in the course of time.

III. GLOBES

Children will understand the full meaning of a map only if there is ample globe study. Globes must be used over and over before flat maps of the world are introduced, and they must be kept in frequent use thereafter, if we are to help children to acquire a true concept of the shape of the earth and to avoid giving the wrong impressions which children frequently receive from flat maps.

Globes, for use in teaching a class or a group, or for reference by individuals, should be not less than sixteen inches in diameter. The sixteen-inch globe has the convenient scale of one inch to 500 miles. We favor the physical-political globe with movable meridian, supported by a high stand from the floor. The content of the map on the globe should be very simple and legible. As far as practicable it should approach the ideal that we have set up for wall maps. Some of the newer globes now on the market are distinct improvements in simplicity and legibility over the globes made only a few years ago.

Both maps and globes should be labeled definitely. They must be authoritative, and, with due allowance for necessary generalizations, of unquestioned accuracy. The sources of their data should be indicated whenever practicable. Finally, in view of the continuing progress of geographic knowledge, and as a protection to the reputation of both author and publisher, they should be dated.

IV. NEEDED INVESTIGATION

As was indicated at the beginning, there is great possibility of improving maps by means of further investigation. Many questions clamor for authoritative answer. Even with the question of legibility—which we may all agree we want—it is only through properly conducted investigation that we may determine, in any final way, just what conditions legibility and how it may be increased. In the mean-

time, we must use the best opinion we can get, based upon as wide a range of experience as possible.

A few of the many unsettled questions that need investigation are the following:

Projections

1. What psychological effect do the various map projections have upon the minds of children?

Scales

1. What is the teaching effect of various scales?
2. What scales are of most value in teaching various units in the course of study?
3. What is the psychological effect of a variety of scales in representing regions of comparable area?
4. What is the psychological effect of a wall map that is a faithful enlargement of the textbook map?

Relief

1. What difficulties are encountered by children in interpreting the different methods of representing relief?
2. What are the psychological effects of the use of maps in actual relief?
3. How should maps be graded in respect to relief?

Color

1. What colors and combinations of color are most effective in directing attention where it is most needed?
2. When the colored area is large or small, what is the effect on attention?
3. What is the effect of using color over an entire area, as compared with the effect of using bands of color around the edge of the area?
4. How may one-tone maps be made most effective?

Content

1. How should maps be graded in respect to content?

Names

1. What is the psychological effect of the use of maps without names, as compared with the use of maps with a few important names?
2. What is the psychological effect of using maps with a few important names, as compared with the use of maps having many names, the more important being printed in type larger than would be necessary for legibility?

Symbols

1. What map symbols do children most readily understand?
2. How may map symbols be made more legible?
3. What are the proper widths of lines for wall maps, textbook maps, etc.?
4. How may the size of a city best be indicated?

5. What is the best way of showing that a river is navigable in certain parts?
6. What style and size of type, what spacing between letters and words, should be used in order to obtain good legibility?
7. What is the effect of superimposing names and other symbols upon various colors?

Attention Value

1. How may maps that are already legible be improved in attention value, so that they will attract attention naturally to the things that are of most importance geographically?

Similar problems easily suggest themselves in regard to scenographic maps, profiles, charts in which map information is graphed in various forms, and globes.

V. CONCLUSION

The subcommittee feels that maps made according to the standards set up in this chapter would be of decided benefit to the teaching of geography in our schools. Surely, if publishers will make the venture and print such maps, teachers will be found who are open-minded enough to give them a trial. If maps of this kind once get a fair trial, we are convinced they will win their way in the schools.

CHAPTER XXVI

A BIBLIOGRAPHY OF GEOGRAPHY BOOKS FOR TEACHERS AND PUPILS¹

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This bibliography contains books suitable for the library of the classroom teacher and for the library of the elementary grades and junior high school. Probably no one library will contain all the books listed, and almost all libraries will have books that are not listed here, since it is impossible to list all the good books in a short bibliography.

I. THE LIBRARY OF THE CLASSROOM TEACHER

The following books deal with the teaching of geography. An energetic teacher will have in her library as many good books on the teaching of geography as possible. Naturally, a progressive teacher will also consult various magazines for articles on teaching geography.²

Adams, William. *Practical Methods for Teaching Elementary Geography*. (Hinds, New York, 1921), 135 pp.

Branom, M. E. and Branom, F. K. *The Teaching of Geography*. (Ginn, Boston, 1921), 292 pp.

²Branom, M. E. *A Teacher's Geography*. (Macmillan, New York, 1928), 252 pp.

Branom, M. E. *The Measurement of Achievement in Geography*. (Macmillan, New York, 1925), 188 pp.

Brown, R. N., Howarth, O. J., and McFarlane, J. *The Scope of School Geography*. (Clarendon Press, Oxford, 1922)

Clark, Rose. *Unit Studies in Geography*. (World Bk., Yonkers, 1926) 250 pp.

Crawford, C. and McDonald, L. *Modern Methods in Teaching Geography*. (Houghton, Boston, 1929), 305 pp.

⁴Fairbanks, H. W. *Real Geography and Its Place in the Schools*. (Harr Wagner, San Francisco, 1927) 200 pp.

¹ The assistance is acknowledged of Ella B. Knight, Special Teacher of Geography, Omaha, Nebraska, in the preparation of this bibliography.

² The abbreviations for publishers used in this chapter are those employed in the well-known *United States Catalog* (H. W. Wilson Co.)—*Editor*.

Moore, C. and Wilcox, Lillian. *The Teaching of Geography*. (American Book, New York, 1932) 256 pp.

Reeder, Edwin. *Geography for Public School Administrators*. (Bur. Publ., Teachers Coll., Columbia Univ., New York, 1931) 100 pp.

Ridgley, D. C. *A Study of Children's Learning about Places*. (Clark University, Worcester, Mass., 1928) 142 pp.

Smith, E. *Teaching Geography by Problems*. (Doubleday, Garden City, 1921) 306 pp.

Stull, DeForest. *Tentative Course of Study in Geography*. (Bureau of Publications, Teachers College, Columbia Univ., New York, 1929) 288 pp.

Thralls, Zoe and Reeder, Edwin. *Geography in the Elementary School*. (Rand, Chicago, 1931)

II. THE CLASSROOM LIBRARY¹

1. Work Books or Study Books

Bodley, G. R. *A Work Book to accompany Peoples of Other Lands*, 1929, 59 pp.; also *Home Geography*, 1929, 112 pp. (Iroquois, Syracuse)

Bodley, G. R. and Thurston, E. L. *A Work Book on North and South America*. (Iroquois, Syracuse, 1930) 89 pp.

Bodley, G. R. and Thurston, E. L. *A Work Book on the Old World Continents*. (Iroquois, Syracuse, 1930) 104 pp.

Branom, Frederick and Ganey, Helen. *Study Lessons for Use with the Social Geography Series*, Books I, II, III, IV, and V. (Wm. Sadlier, New York, 1931)

Ivy, M. C. and Holland, Lany. *Workbooks to Accompany the Dodge-Lackey Elementary and Advanced Textbooks*. (Rand, Chicago, 1931)

Miller, George. *Pupil's Outline for Home Study*. Europe; Asia; Africa, and Australia; North America (except the United States) and South America; South America, Africa, and Australia; Physical and Mathematical Geography. (Jennings Pub. Co., Newton, Mass., 1924-1926)

Ridgley, D. C. and Others. North America, 1927, 96 p.; South America, Europe and Asia, 1927, 96 p.; Africa, Australia, and Advanced World Geography, 1927, 128 p.; Western Hemisphere, 1929, 96 p.; Weather and Climate, 1930, 128 p.; World Geography, 1927, 128 p.; Home Geography, 1927, 128 p. (McKnight and McKnight, Normal, Ill.)

Stull, DeForest and Raisz, Erwin. *Simplified Home Geography Activities Book*. (A. J. Nystrom, Chicago, 1931)

2. Textbooks

Undoubtedly the best geography textbooks in the world are used in American schools. The teacher has a wide variety of textbooks from which to choose. Textbooks, other than the adopted one, make good reference material for the pupils. The authors and publishers

¹ For material on tests in geography, see Chapter XXI.

endeavor to keep their books up to date; hence no publishing dates are given.

Atwood, Wallace and Thomas, Helen. *The Earth and Its People*. Book I, Home Life in Far Away Lands; Book II, The Americas; Book III, Nations Beyond the Seas. (Ginn, Boston)

Atwood, Wallace. *The United States Among the Nations; The World at Work*. (Ginn, Boston)

Barrows, Harlan and Parker, Edith. *Journeys in Distant Lands; the United States and Canada*. (Silver, New York)

Barrows, Harlan; Parker, Edith and Parker, Margaret. *Europe and Asia; Southern Lands*. (Silver, New York)

Bishop, Avard and Keller, Albert. *Industry and Trade*. (Ginn, Boston)

Branom, Frederick and Ganey, Helen. *Social Series of Geographies*. Book I, Home Lands and Other Lands; Book II, Western Hemisphere; Book III, Eastern Hemisphere; Book IV, Our World. Various other special books. (Wm. Sadlier, New York)

Brigham, Albert and McFarlane, Charles. *Essentials of Geography*. First Book, Second Book. (Am. Bk., New York)

Dodge, R. E. and Lackey, Earl. *Elementary Geography, Advanced Geography*. (Rand, Chicago)

Fairbanks, Harold. *New Progressive Series of Geographies*. Books on the various continents. Also *The Home and Its Relation to the World*. (Harr Wagner, San Francisco)

Fairbanks, Harold. *Home Geography*. (Educ. Pub. Co., New York)

Huntington, Ellsworth and Cushing, Sumner. *Modern Business Geography*. (World Bk., Yonkers)

Knowlton, Philip. *First Lessons in Geography; Introduction to World Geography*. (Macmillan, New York)

McMurry, Frank and Parkins, A. E. *Elementary and Advanced Geographies; The New World; The Old World*. (Macmillan, New York)

Packard, Leonard and Sinnott, Charles. *Nations as Neighbors*. (Macmillan, New York)

Ridgley, D. C. and Dillon, Jessie. *Local Geography for Beginners*. (McKnight and McKnight, Normal, Illinois)

Shepherd, Edith. *Geography for Beginners*, Book I and Book II. (Rand, Chicago)

Smith, J. R. *Human Geography*, Book I, Peoples and Countries; Book II, Regions and Trade. (Winston, Philadelphia)

Stull, DeForest and Hatch, Roy W. *Our World Today*. (Allyn, Boston)

Weinberg, L., Scott, Z. E., and Holston, Evelyn T. *The World We Live In*. (Heath, Boston)

3. Reference Books

Additional books might be added to this list. Many of the books are so written that they may be used in more than one grade. The

classification that we make here is very general and all teachers may not agree with it. Letters prefixed to titles are to be read as follows: (u) adapted for upper grades; (m) adapted for the middle grades; (l) adapted for the lower grades.

Aitchison, Alison and Uttley, Marguerite. (l) *Across Seven Seas to Seven Continents*. (Bobbs-Merrill, Indianapolis, 1925) 304 pp. (m) *North America by Plane and Train*. (Bobbs, Indianapolis, 1931) 404 pp.

Allen, Nellie. (m) *Cotton and Other Useful Fibers*, 1929, 368 pp.; (m) *Geographical and Industrial Studies: North America*, 1922, 391 pp.; *South America*, 1918, 413 pp.; *Europe*, 1928, 419 pp.; *Asia*, 1929, 445 pp.; *Africa, Australia, and the Islands of the Pacific*, 1924, 448 pp.; *The United States*, 1925, 340 pp.; (u) *Our Cereal Grains*, 1928, 300 pp.; (l) *How and Where We Live*, 1924, 282 pp. (Ginn, Boston)

Babson, Roger. (m) *A Central American Journey*. (World Bk., Yonkers, 1920) 219 pp.

Bailey, Carolyn. (m) *Boys and Girls of Pioneer Days*. (Flanagan, Chicago, 1924) 190 pp.

Brandeis, Madeline. (l) *The Little Indian Weaver*, 1928, 134 pp.; *The Little Swiss Wood Carver*, 1929, 160 pp.; *The Little Dutch Tulip Girl*, 1929, 192 pp.; *The Wee Scotch Piper*, 1929, 159 pp.; *Little Jean of France*, 1929, 190 pp.; *Little Philippe of Belgium*, 1930, 189 pp. (Flanagan, Chicago)

Brooks, E. C. (m) *Stories of South America*. (Johnson Pub. Co., Richmond, Va., 1922) 272 pp.

Bunker, Frank. (u) *Lands and Peoples—Hawaii and the Philippines*. 1928, 207 pp.; *China and Japan*, 1928, 253 pp. (Lippincott, Philadelphia)

Burks, Frances. (l) *Barbara's Philippine Journey*. (World Bk., Yonkers, 1913) 199 pp.

Chamberlain, James. (l) *How We Are Sheltered*, 1924, 156 pp.; *How We Are Fed*, 1923, 200 pp.; *How We Travel*, 1924, 182 pp.; *How We Are Clothed*, 1923, 189 pp. (Macmillan, New York)

Chamberlain, James and Chamberlain, Arthur. (m) *The Continents and Their People: North America*, 1927, 360 pp.; *South America*, 1926, 203 pp.; *Europe*, 1927, 264 pp.; *Asia*, 1925, 228 pp.; *Africa*, 1925, 206 pp.; *Oceania*, 1925, 172 pp. (Macmillan, New York)

Chiesa, Carol. (m) *The Three of Salu—Around the Year in Northern Italy*. (World Bk., Yonkers, 1923) 179 pp.

Clark, Vinnie. (u) *Europe; A Geographical Reader*. (Silver, New York, 1925) 555 pp.

Cooper, Merian. (u) *Grass*. (Putnam, New York, 1925) 362 pp.

Crosby, Rena. (u) *The Geography of Bible Lands*. (Abingdon Press, New York, 1921) 242 pp.

Dakin, Wilson. (l) *Great Rivers of the World*. (Macmillan, New York, 1925) 204 pp.

Dodge, R. E. and Bowman, Isaiah. (u) *South America*. (Rand, Chicago, 1921) 354 pp.

Duval, Elizabeth. (l) *This Earth We Live On*. (Stokes, New York, 1927) 156 pp.

Fairgrieve, James and Young, Ernest. *Human Geography by Grades*: (l) *Children of Many Lands*, 1927; (l) *Homes Far Away*, 1923; (m) *The World*, 1925; (m) *The United States*, 1925; (m) *The New World and the Old*, 1926; (u) *Europe and the British Isles*. (Appleton, New York)

Fisher, Elizabeth. (u) *Resources and Industries of the United States*. (Ginn, Boston, 1928) 246 pp.

Fox, Florence. (m) *How the World Rides*. (Scribner, New York, 1929) 143 pp.

Franck, Harry. (u) *Travels in Many Lands—The Japanese Empire*, 1927; 256 pp.; *China*, 1927, 256 pp.; *Mexico and Central America*, 1927, 288 pp.; *South America*, 1928, 319 pp. (Owen, Dansville, N. Y.)

Franck, Harry. (u) *Working My Way Around the World*. (Century, New York, 1918) 346 pp.

Gilman, Isabel. (m) *Alaska, the American Northland*. (World Bk., Yonkers, 1923) 343 pp.

Gilson, Jewett. (m) *Wealth of the World's Waste Places and Oceania*. (Scribner, New York, 1913) 327 pp.

Gist, Arthur; Eide, Arthur; and Gist, Ruth. (l) *New Stories from Eskimo Land*. (Wagner, San Francisco, 1930) 214 pp.

Gregory, J. W. (u) *Africa*. (Rand, Chicago, 1928)

Guitteau, William and Winter, Nevin. (l) *Seeing South America*. (Row, Evanston, Ill., 1929) 336 pp.

Hawthorne, Hallam. (m) *The Adventures of a Grain of Dust*, 1922, 251 pp.; *The Strange Adventures of a Pebble*, 1921, 296 pp. (Scribner, New York, 1921) 296 pp.

Hillyer, V. M. (m) *A Child's Geography of the World*. (Century, New York, 1929) 472 pp.

Huntington, Ellsworth. (u) *Asia*. (Rand, Chicago, 1912)

Jordan, David Starr and Cather, Katherine. (u) *High Lights of Geography—Europe*, 1925, 321 pp.; *North America*, 1925, 358 pp. (World Bk., Yonkers)

Klenova, Varia and Lamprey, Louise. (l) *Natalia and Nikolai—Children of Russia*. (World Bk., Yonkers, 1928) 176 pp.

Latimer, Louise. (u) *Your Washington and Mine*. (Scribner, New York, 1924) 342 pp.

Lefferts, Walter. (m) *Our Own United States*, 1925, 344 pp.; *Neighbors—North and South*, 1926, 291 pp.; *Our Neighbors in South America*, 1927, 306 pp. (Lippincott, Philadelphia)

Maguire, Emma. (l) *Two Little Indians*. (Flanagan, Chicago, 1923) 125 pp.

McDonald, Etta and Dalrymple, Julia. (m) *Little People Everywhere—Hassan in Egypt*, 1911, 114 pp.; *Manuel in Mexico*, 1909, 118 pp.; *Rafael in Italy*, 1909, 119 pp.; *Boris in Russia*, 1910, 120 pp.; *Kathleen in Ireland*, 1909, 113 pp.; *Josefa in Spain*, 1912, 117 pp.; *Umé San in Japan*, 1909,

118 pp.; *Donald in Scotland*, 1912, 117 pp.; *Gerda in Sweden*, 1910, 119 pp. (Little, Boston)

McDonald, Etta. (m) *Colette in France*, 1913, 120 pp.; *Chandra in India*, 1916, 111 pp. (Little, Boston)

McFee, Inez. (m) *Forest Friends in Fur*. (Flanagan, Chicago, 1930) 252 pp.

Mitchell, Addie. (l) *Paz and Pablo—A Story of Two Little Filipinos*. (World Bk., Yonkers, 1917) 93 pp.

Mulets, Lenore. (l) *Sunshine Lands of Europe*. (World Bk., Yonkers, 1918) 159 pp.

Muller, Mary. (l) *Little People of Japan*, 1925, 190 pp.; *Little People of the Snow*, 1925, 135 pp. (Flanagan, Chicago)

Nida, William and Nida, Stella. (l) *Little White Chief*, 1923, 128 pp. (Flanagan, Chicago)

Nida, William. (l) *The Tree Boys*, 1929, 127 pp.; *Fleetfoot, the Cave Boy*, 1929, 192 pp.; *Taming the Animals*, 1930, 240 pp. (Laidlaw, New York)

Nida, William. (l) *Farm Animals and Farm Crops*. (Flanagan, Chicago, 1925) 258 pp.

Olcott, Virginia. (l) *Anton and Trini—Children of the Alpland*. (Silver, New York, 1930) 152 pp.

Olmstead, Emma and Grant, Emma. (l) *Ned and Nari in Holland*. (Row, Evanston, Ill., 1916) 128 pp.

Owen, Francis and Ramsay, E. M. (m) *Nuts and Their Uses*. (Owen, Dansville, N. Y., 1928)

Perdue, H. A. (l) *How Other Children Live*. (Rand, Chicago, 1927) 216 pp.

Pitkin, Walter and Hughes, Harold. (u) *Seeing America—Farm and Field*, 1924, 314 pp.; *Mill and Factory*, 1926, 333 pp. (Macmillan, New York)

Pratt-Chadwick, Mara and Lamprey, L. (l) *The Alo Man—Stories from the Congo*. (World Bk., Yonkers, 1921) 170 pp.

Price, Olivia. (u) *The Middle Countries—A Chinese Lad's Adventures in His Own Land*. (World Bk., Yonkers, 1926) 176 pp.

Price, Overton. (u) *The Land We Live In*. (Dodd, New York, 1911) 242 pp.

Ramsay, Ellen. (m) *Story of the Citrus Fruits*. (Owen, Dansville, 1928)

Redfield, William. (l) *We and the World*. (Silver, New York, 1927) 194 pp.

Redway, Jacques. (u) *All Around Asia*. (Scribner, New York, 1910) 313 pp.

Rochelleau, W. F. (l) *The Great American Industries Series: Transportation*, 1923, 312 pp.; *Minerals*, 1929, 212 pp.; *Manufactures*, 1928, 222 pp.; *Products of the Soil*, 1928, 192 pp. (Flanagan, Chicago)

Salisbury, Ethel (m) *From Panama to Cape Horn*. (World Bk., Yonkers, 1927) 294 pp.

- Scantlebury, Elizabeth. (l) *Little World Children*. (Ginn, Boston, 1928) 126 pp.
- Shillig, Elnora. (l) *Four Wonders: Cotton, Wool, Linen, Silk*. (Rand, Chicago, 1913) 137 pp.
- Smith, Laura. (l) *Little Eskimo*. (Flanagan, Chicago, 1911) 159 pp.
- Sugimoto, Etsu and Austen, N. V. (l) *With Taro and Hana in Japan*. (Stokes, New York)
- Taylor, Griffith. (u) *Australia*. (Rand, 1931)
- Thomas, Katheryne. (l) *Asia*. (Bobbs, Indianapolis, 1931)
- Thompson, Ruth. (l) *Type Stories of the World for Little Folks*. (Harr Wagner, San Francisco, 1922) 236 pp.
- Thomson, Jay. (u) *Our Atlantic Possessions*. (Scribner, New York, 1928) 219 pp.
- Thorsmark, Thora. (l) *In Wooden Shoe Land*. (Row, Evanston, Ill., 1929) 286 pp.
- Van Deusen, Elizabeth. (m) *Stories of Porto Rico*, 1926, 245 pp.; *Tales of Borinquen* [*Porto Rico*], 1928, 294 pp.; *Tropical Tales* [*Porto Rico*], 1929, 240 pp. (Silver, New York)
- Verrill, A. Hyatt. (m) *The Ocean and Its Mysteries*. (Duffield, New York, 1916) 189 pp.
- Warshaw, J. (u) *The New Latin America*. (Crowell, New York, 1922) 415 pp.
- Werthner, William. (u) *How Man Makes Markets*. (Macmillan, New York, 1918) 200 pp.
- Wheeler, William and Holmes, Burton. (m) *Burton Holmes Travel Stories: Japan*, 1924, 404 pp.; *China*, 1930, 408 pp.; *Egypt*, 1924, 404 pp. (Wheeler Pub., Chicago)
- White, Rufus. (m) *South America To-day*. (Flanagan, Chicago, 1929) 254 pp.
- Willard, Mary (m) *Along Mediterranean Shores*. (Silver, New York, 1914) 269 pp.
- Worthington, Josephine and Matthews, Catherine. (m) *Our Food*. (Owen Dansville, N. Y., 1930) 256 pp.
- Wyman, Herbert. (m) *Bemol and Kusum—Children of Bengal*. (World Bk., Yonkers, 1925) 260 pp.
- Yard, Robert. (m) *The Top of the Continent*. (Scribner, New York, 1917) 244 pp.

CHAPTER XXVII

PUBLISHED MATERIALS FOR THE TEACHERS COLLEGE LIBRARY

ELIZABETH T. PLATT
American Geographical Society
New York City

Such a bibliography as the following can at best be but an inadequate survey of the material available to the teacher of geography or to the student of geography in a teachers college. The field is so vast and the amount of published work so great that only the barest indication of what there is can be given. One title is inserted where half a dozen others of equal value might well have been included. Practically all of the following references are to publications that are easy to obtain. Where the book is out of print, it has been felt that the work is of such importance that it will be found in any average college or public library or that it may be purchased from a dealer in second-hand books.

I. GENERAL AIDS

The general aids, such as the numerous indexes of the H. W. Wilson Company and the indexes to government and state publications, are too well known to need any comment. Less generally known are the strictly geographical bibliographies. An adequate guide to these is Dr. Wright's *Aids to Geographical Research*. For current material there are two publications which ought to be especially noted: the *Geographisches Jahrbuch* and the *Bibliographie Géographique*. The arrangement of materials in the two differs, so that there is little duplication. The *Bibliographie Géographique* publishes annually the titles of material issued during the year in the entire field of geography. Critical notes are added. Each year the *Geographisches Jahrbuch* enumerates the publications in a few of the branches of geography and also for a limited number of countries for the years since that subject or country has last been dealt with in the *Jahrbuch*. By consulting these two bibliographies, one may feel that little of importance in the field of geography has escaped his attention.

For suggesting supplementary reading, there are a number of valuable aids available. A helpful one is the history and travel section of Miss Sears's annotated catalog. As the selection of material has been made to meet the needs of the small and medium-sized library, the books cited therein ought to be available to the majority of teachers. Although now out of date in many respects, Mill's *Guide to Geographical Books and Appliances* is still a mine of information. Clark University issues a useful series of pamphlets dealing with the geographical literature for the elementary grades and junior high school and the teaching of geography. For free and inexpensive material, Miss Booth's pamphlet has long been a standard work.

1. Indexes

Education Index. (New York, Wilson, 1929-date)

Readers' Guide to Periodical Literature. (New York, Wilson, 1900-date)

International Index to Periodicals Devoted Chiefly to the Humanities and Science. (New York, Wilson, 1907-date)

Agricultural Index. (New York, Wilson, 1919-date)

Industrial Arts Index. (New York, Wilson, 1913-date)

Bibliographie Géographique. (Paris, A. Colin, 1891-date)

Geographisches Jahrbuch. (Gotha, J. Perthes, 1866-date)

Supplement to the Geographical Journal. Recent geographical literature, maps, and photographs added to the society's collections. (London, Royal Geographical Society, 1918-date)

U. S. Superintendent of Documents. *Monthly Catalogue of the United States Public Documents.* (Washington, Gov. print. off., 1895-date)

U. S. Library of Congress, Division of documents. *Monthly Check-List of State Publications.* (Washington, Gov. print. off., 1910-date)

U. S. Government Printing Office. *Weekly List of Selected United States Government Publications.* (Washington, Gov. print. off., 1928-date)

U. S. Superintendent of Documents. "Price lists." (Washington, Gov. print. off.)

Those of special geographical value are: No. 15. Geological survey; 18. Engineering and surveying, rivers, harbors, tides, magnetism, triangulation; 20. Public domain; 21. Fishes; 24. Indians; 25. Transportation; 31. Education; 32. Insular possessions; 35. Geography and exploration; 36. Government periodicals; 38. Animal industry; 39. Birds and wild animals; 41. Insects; 42. Irrigation, drainage, water-power; 43. Forestry; 44. Plants; 45. Roads; 46. Agricultural chemistry, soils and fertilizers; 48. Weather, astronomy, and meteorology; 50. American history; 53. Maps; 55. National museum; 58. Mines; 59. Interstate commerce commission; 60. Alaska; 62. Commerce and manufactures; 63. Navy; 64. Standards of weight and measure; 65. Foreign relations; 67. Immigration; 68. Farm management; 69. Pacific states; 70. Census; 73. Handy books.

- Canada. Department of public printing and stationery. Division of documents. *Catalogue of Official Publications of the Parliament and Government of Canada*. (Ottawa, F. A. Acland, 1928)
- Royal Empire Society. *Overseas official publications received by the Royal Empire Society (formerly Royal Colonial Institute) and issued in the overseas British Empire or relating thereto*. (London, 1927-date)
- Mudge, I. G. *Guide to Reference Books*. 5th ed. (Chicago, Amer. Library Assoc., 1929) 370 pp.
- Wright, J. K. *Aids to Geographical Research; Bibliographies and Periodicals*. (New York, Amer. Geographical Soc., 1923) 243 pp.

2. Supplementary Reading

- Sears, M. E. *Standard Catalog for Public Libraries*. History and travel section. An annotated list of 1900 titles with a full analytical index. (New York, Wilson, 1929) 285 pp. *Supplement*, 1931.
- Sears, M. E. *Children's Catalog*. 3d ed. rev. and enl. A dictionary catalog of 4100 books, with analytical entries for 863 books. (New York, Wilson, 1925)
- Sears, M. E. *Children's Catalog*. 3d ed. rev. and enl. A dictionary catalog of 1200 books with analytical entries for 272 books. (New York, Wilson, 1928)
- Mill, H. R. *Guide to Geographical Books and Appliances*. Rev. by A. J. Herbertson, J. F. Unstead and N. E. Macmunn. (London, G. Philip & Son, 1910) 207 pp.
- Wharton, D., ed. *Short List of Novels and Literary Works of Geographic Interest*. (Prepared by the Leeds Branch of the Geographical Association, with the coöperation of the other Yorkshire Branches. Aberystwyth, n. d.) 22 pp.
- Knight, E. B. *A Bibliography of Geographical Literature for Elementary Grades and Junior High School*. 2d rev. ed. (Worcester, Clark Univ., 1928) 59 pp.

3. Free Material

- Booth, M. J. *Material on Geography Including Commercial Products, Industries, Transportation and Educational Exhibits Which May Be Obtained Free or at Small Cost*. 5th rev. ed. (Charleston, Ill., 1931) 108 pp.
- Branom, F. "Free material in geography," *Chicago Schools Jour.*, 6:1924, 216-223.
- Richey, G. V. *Free Geography Material and Where to Get It*. (Fort Worth, Texas, Pioneer Pub. Co., n. d.) 5 pp.
- Smith, Harriet and Mitchell, A. *Some Helps in the Teaching of Geography*. (Huntsville, Texas, Sam Houston State Teachers College Press, 1926) 12 pp.
- Smith, H. J. *Teaching Aids for the Asking*. (Minneapolis, Univ. of Minn. Press, 1928) 60 pp.
- U. S. Office of Education. *Government Publications of Use to Teachers of Geography and Elementary Science*. (Washington, 1930) 14 pp.

Woodring, M. E., Oakes, M. E., and Brown, H. E. *Enriched Teaching of Science in the High School*. (New York, Teachers College, 1928) 374 pp.

A source book for teachers of general science, biology, physics, chemistry, and other sciences, listing chiefly free and low cost illustrative and supplementary materials.

II. MATHEMATICAL GEOGRAPHY

Professor Lobeck's graphic presentation of "the earth in space" will help the teacher make clear the problems of mathematical geography. The two small volumes on maps by Mr. Hinks are clear and concise statements, and the volume by Deetz and Adams is a good survey of the various map projections.

1. The Earth as a Planet

Lobeck, A. K. *The Earth in Space*. (New York, The Geographical Press, 1929) 8 pp.

U. S. Bureau of Standards. *Standard Time Conversion Chart*. (Washington, 1928, Misc. publ. 84)

Gt. Brit. Admiralty. *Time Zone Chart*. (London, 1928, Chart 5006)

2. Areas and Distances

U. S. Hydrographic Office. *Table of Distances between Ports via the Shortest Navigable Routes*, etc. (Washington, Gov. print. off., 1931, H. O. Publ. 117) 335 pp.

Douglas, E. M. *Boundaries, Areas, Geographic Centers and Altitudes of the United States and the Several States*, 2d ed. (Washington, Gov. print. off., 1930. U. S. Geological survey. Bulletin 817) 265 pp.

Gannett, Henry. *Dictionary of Altitudes in the United States*. 4th ed. (Washington, Gov. print. off., 1906) 1072 pp.

U. S. Coast and Geodetic Survey. *Length in Statute Miles of the General Coast Line and Tidal Shore Line of the United States and Outlying Territories*. (Washington, Gov. print. off., 1915, serial no. 22) 3 pp.

U. S. Board of Surveys and Maps. Map information office. *Extreme and Mean Altitudes in the United States and in its Outlying Possessions*. (Washington, 1929) 3 pp.

U. S. Board of Surveys and Maps. Map information office. *Area of the United States in 1783. Area of the Louisiana Purchase of 1803. Areas of Territories and States Formed since 1783*. Compiled by E. M. Douglas. (Washington, 1930) 19 pp.

3. Map Projections

Hinks, A. R. *Map Projections*. (Macmillan, 1912) 126 pp.

Hinks, A. R. *Maps and Survey*. (Macmillan, 1913) 206 pp.

U. S. Coast and Geodetic Survey. *Elements of Map Projection with Applications to Map and Chart Construction*, by C. H. Deetz and O. S. Adams.

Washington, Gov. print. off., 1931. Special publication no. 68. 3d ed. rev. May 1, 1931. 173 pp.

III. PHYSIOGRAPHY AND MINERAL RESOURCES

The United States Geological Survey and the various state geological surveys are the primary sources of information for physiographic and geologic studies of the United States. In addition to its *Annual Report*, the Geological Survey publishes a series of *Professional Papers*, *Bulletins*, *Water Supply Papers*, *Folios of the Geologic Atlas of the United States*, *Topographic Maps*, and *Special Publications*. In each of these series the teacher will find much valuable information. An index map showing the published maps and geological folios of areas in any state may be had upon application to the Director, U. S. Geological Survey, Washington, D. C. A recent list of publications of the Survey is available, and Price List 15 indicates those publications obtainable from the Superintendent of Documents.

The publications of the various state geological surveys are too numerous to mention here; much valuable geographical material is to be found among them. A. K. Lobeck's *Physiographic Diagram of the United States* is too well known to need any comment, and the standard work on the physiographic divisions of the United States is by Professor Fenneman. Several important geological periodicals are published in the United States. These often contain valuable physiographic papers. The Bureau of Mines issues annually *Mineral Resources. Pt. 1. Metals. Pt. 2. Non Metals*. A list of their publications from 1910-1930 is available and contains a list of fifty-two motion picture films distributed by the Bureau of Mines. Price List 58 is a list of publications procurable from the Superintendent of Documents dealing with mines.

U. S. Geological Survey. *World Atlas of Commercial Geology*. Pt. I. Distribution of mineral production. Washington, 1921. 72 p., 72 pl. Pt. II. Water power of the world. Washington, 1921. 39 p. 8 pl.

Mathews, E. B. *Catalogue of Published Bibliographies in Geology, 1896-1920*. (Washington, 1923, Nat. Research Council, Bull. VI. Pt. 5. No. 36) 228 pp.

Nickles, J. M. *Geological Literature on North America, 1785-1918*. (Washington, Gov. print. off., 1923-1924, 2 v. U. S. Geol. Survey, Bull. 746-747 [and supplement, 1919-1928] Bull. 823.)

Lobeck, A. K. *A Physiographic Diagram of the United States*. (Chicago, Nystrom, 1921) 12 pp.

1:3,000,000; also small scale edition. 1922.

- Fenneman, N. M. "Physiographic Divisions of the United States." 3d ed. rev. and enl. (*Annals of the Assoc. of Amer. Geographers*. 18:1928, 261-353. map 1:7,000,000).
- Bowman, Isaiah. *Forest Physiography*. (New York, Wiley, 1911) 759 pp.
- Imperial Institute. *The Mineral Industry of the British Empire and Foreign Countries. Statistical Summary*. (London, H. M. Stat. off. Publ. annually)
- Miller, B. L. and Singewald, J. T. *The Mineral Deposits of South America*. (New York, McGraw-Hill, 1919) 598 pp.
- Bulletin of the Geological Society of America*. New York.
- The Journal of Geology*. (Chicago, Univ. of Chicago Press)
- Economic Geology*. (Lancaster, Pa.)

IV. CLIMATOLOGY

An excellent summary of the literature of climatology was issued by the late Professor Ward. Practically every teacher of geography uses some of the publications of the United States Weather Bureau. The daily weather map may be obtained from the nearest Weather Bureau station. Climatological data for sections of the United States are available in *Summaries of Climatological Data by Sections*.

- Ward, R. DeC. "The literature of climatology." *Annals of the Assoc. of Amer. Geographers*, 21:1931, 34-51)
- U. S. Weather Bureau. Daily Weather Map. (Washington and local stations)
- U. S. Weather Bureau. *Summaries of Climatological Data by Sections*. 2d ed. (Washington, Weather Bureau, 1926, 3 v. Bull. W.)
- U. S. Monthly Weather Review Supplements. (Washington, published irregularly)
- U. S. Weather Bureau. *Cloud Forms according to International System of Classification*. 2d ed. 1928. 22 pp.
- U. S. Weather Bureau. *Weather Forecasting from Synoptic Charts*. (Washington, Gov. print. off., 1930) 80 pp.
- U. S. Weather Bureau. *Weather Forecasting*. (5th ed. 1929) 28 pp.
- U. S. Weather Bureau. *Daily Weather Map, with Explanations*. 1929. 8 pp.
- Monthly Weather Review*. (Washington, 1873-date)
- U. S. Weather Bureau. *Snow and Ice Bulletin*. (Weekly, December-April)
- U. S. Superintendent of Documents. *Weather, Astronomy, and Meteorology*. (Washington, Govt. print. off., price list 48)
- Ward, R. DeC. *The Climates of the United States*. (Boston, Ginn, 1925) 518 pp.
- Hann, Julius. *Handbuch der Klimatologie*. 3d ed. (Stuttgart, J. Engelhorn, 1908-1911) 3 v.
- Kendrew, W. G. *The Climates of the Continents*. 2d ed. (London, Clarendon Press, 1927) 400 pp.
- Clayton, H. H. *World Weather Records*. (Washington, Smithsonian Institution, 1927. Smithsonian misc. coll. Vol. 79) 1199 pp.

- Gt. Brit. Meteorological Office. *Réseau Mondial*. Monthly and annual summaries of pressure, temperature, and precipitation based on a world-wide network of observing stations. (London, H. M. Stat. office)
- Bartholomew, J. G. *Atlas of Meteorology*. (Westminster, Constable, 1899) 40 pp.

V. STATISTICAL AIDS AND YEARBOOKS

Of the many statistical manuals and yearbooks, the *World Almanac*, the *Statesman's Yearbook* and the *Statistical Abstract of the United States* are of outstanding value to the geography teacher.

- Schmeckebier, L. F. *The Statistical Work of the National Government*. (Baltimore, Johns Hopkins Press, 1925. Institute for government research. Studies in administration) 574 pp.
- Permanent consultative committee on official statistics. *Guide to Current Official Statistics of the United Kingdom*. (London, H. M. Stationery Off., 1922-date)
- League of nations. Economic and financial section. *International Statistical Yearbook*. (Geneva, latest issue)
- Institut international de statistique. *Aperçu de la démographie des divers pays du monde*. (La Haye, Van Stockum, latest issue)
- U. S. Bureau of the Census. *Statistical Atlas of the United States*. (Washington, Gov. print. off., 1925) 476 pp.
- The World Almanac*. (New York, The World-Telegram, 1868-date)
- The Statesman's Yearbook*. (New York, Macmillan, 1864-date)
- U. S. Bureau of Foreign and Domestic Commerce. Statistical abstract of the United States. (Washington, Gov. print. off., 1878-date)
- Dominions office and Colonial office List comprising historical and statistical information respecting the overseas dominions and colonial dependencies of Great Britain*. (London, Waterlow, 1862-date)
- The American Yearbook*. (New York, Amer. Yearbook Corp., 1910-1919, 1925-date)

VI. ECONOMIC GEOGRAPHY

Agricultural publications are numerous, and the agricultural index of the Wilson Company is a good source for locating what is available. The *Yearbook* of the Department of Agriculture contains much helpful information. A new edition of Baker's *Graphic Summary of American Agriculture* has recently been issued. The publications of the Bureau of Foreign and Domestic Commerce of the United States are a great storehouse of information for the teacher of geography. The Bureau publishes regularly: (1) *Commerce Reports: a Weekly Survey of Foreign Trade*, which contains up-to-the-minute information hard to find elsewhere; (2) the *Commerce Yearbook*, an annual publication

in two volumes: I. "The United States"; II. "Foreign Countries." Information on production, foreign trade, agriculture, fuel, metals, automotive products, rubber, textiles, transportation, banking, etc., is contained therein; (3) the *Monthly Summary of Foreign Commerce of the United States*; (4) the *Foreign Commerce and Navigation of the United States*, an annual publication giving statistics of foreign trade; (5) the *Statistical Abstract of the United States* (listed above). Besides these periodical publications several series are issued: (1) *Trade Promotion Series*, which are substantial monographs; (2) *Trade Information Series*, pamphlets of immediate or temporary interest; (3) *Domestic Commerce Series*; (4) *Special Agents Series* (none issued since 1924). Recent lists of *Publications of the Bureau of Foreign and Domestic Commerce* are available and *Price List 62* contains a list of publications dealing with commerce and manufactures for sale by the Superintendent of Documents. The chief sources of information on commerce and industry of the United States are the Bureau of the Census, Bureau of Foreign and Domestic Commerce, the United States Shipping Board, the Chief of Engineers of the United States Army, and the Interstate Commerce Commission.

1. Agriculture

- U. S. Department of Agriculture. *Yearbook of Agriculture*. (Washington, Gov. print. Off., annual)
- U. S. Department of Agriculture. Bureau of chemistry and soils. [Soil surveys] (Washington, Gov. print. off.)
- Wolfanger, L. A. *The Major Soil Divisions of the United States*. (New York, Wiley, 1930) 150 pp.
- U. S. Department of Agriculture, Office of Farm Management. *Atlas of American Agriculture*. (Washington, 1917-date)
- Finch, V. C. and Baker, O. E. *Geography of the World's Agriculture*. (Washington, Gov. print. off., 1917) 149 pp.
- Baker, O. E. *A Graphic Summary of American Agriculture, Based Largely on the Census*. (Washington, Gov. print. off., 1931; U. S. Department of Agriculture. Miscellaneous publication, No. 105)
- International Institute of Agriculture. *Yearbook*. (Rome)
- U. S. Department of Agriculture. *List of available publications of the United States Department of Agriculture. June 1, 1929*. (Washington, Gov. print. off., 1929; miscellaneous publication, No. 60)

2. Commerce and Industry

- U. S. Shipping board. Bureau of Research. *Report on Volume of Water Borne Foreign Commerce of the United States*. (Washington, Gov. print.

- off. Annual) Pt. 1. Commerce of United States ports with foreign ports. Part 2. Commerce of foreign ports with United States ports.
- U. S. Army. Chief of engineers. *Commercial Statistics; Water-Borne Commerce of the United States*. (Washington, Gov. Print. Off. Annual)
- Association of British Chambers of Commerce. *The Chambers of Commerce Atlas*. (London, Philip, 1925)
- Philip, George. *Mercantile Marine Atlas*. (London, Philip, 1924)
- Bartholomew, J. G. and Lyde, L. W. *An Atlas of Economic Geography* (text and maps) 3d ed. rev. and enl. in co-operation with M. R. Shackleton. (London, Oxford Univ. Press, 1928) xcii and 74 pp.
- Bartholomew, J. G. *The Oxford Economic Atlas*. 6th ed. (London, Oxford Press, 1925) xi and 64 pp.
- Finch, V. C. *Economic Geography Maps*. (Chicago, Nystrom) 1. Products of the world. 2. Products and industries of the United States.
3. Transportation and Communication
- Interstate Commerce Commission. *Annual Report on the Statistics of Railways in the United States*. (Washington, Gov. print. off.)
- Jefferson, Mark. "The civilizing rails." *Economic Geography*, 4:1929, 217-231.
- Baldwin, C. F. *Motor-Vehicle World Census. Jan. 1, 1931*. (Commerce reports, No. 27. July 6, 1931, 3-7)
- National Automobile Chamber of Commerce. *Facts and Figures of the Automobile Industry*. (New York, annual)
- Root, B. P. and Freidson, I. *Highways of the World; Annual Statistical Survey of Mileages, Types of Construction and Expenditures*. (Commerce Reports, No. 1. Jan. 5, 1931, 3-9)
- U. S. Department of Agriculture. Bureau of Public Roads. *Report of a Survey of Transportation on the State Highway System*. (Connecticut, 1926; Ohio, 1927; Cook Co., Ill., 1925; Vermont, 1927; New Hampshire, 1927; Cleveland, 1928; Pennsylvania, 1928; the West, 1932)
- U. S. Bureau of the Census. *Water Transportation, 1926*. (Washington, Gov. Print. Off., 1929) 172 pp.
- U. S. Bureau of Foreign and Domestic Commerce. *Great Lakes-to-Ocean Waterways. Some Economic Aspects of the Great Lakes-St. Lawrence, Lakes-to-Hudson and All-America Waterway Projects*. (Washington, Gov. Print. Off., 1927, Domestic Commerce Series. 4) 134 pp.
- U. S. Bureau of Foreign and Domestic Commerce. *Inland Water Transportation in the United States*. (Washington, Gov. Print. Off., 1923, miscellaneous series, 119) 95 pp.
- U. S. Bureau of Foreign and Domestic Commerce. *Inland-Waterway Freight Transportation Lines in the United States*. (Washington, Gov. Print. Off., 1930, Domestic Commerce Series, 32) 149 pp.
- U. S. Bureau of Railway Economics. *An Economic Survey of Inland Waterway Transportation in the United States*. (Washington, 1930) 238 pp.
- Pellett, M. E. *Water Transportation: A Bibliography, Guide, and Union Catalogue*. (New York, Wilson, 1931) Vol. 1. Harbors, Ports and Port Terminals. 685 pp.

- U. S. Army and U. S. Shipping Board. (1) *Port Series*. (2) *Transportation Series*. (3) *Lake Series*. (Washington, Gov. Print. Off., in course of publication)
- U. S. Bureau of Foreign and Domestic Commerce. *Ports of the United States*. Report on terminal localities, commerce, port charges, and administration at sixty-eight selected ports, by G. M. Jones. (Washington, Gov. Print. Off., 1916, Miscellaneous Series No. 33) 431 pp.
- Cricher, A. L. *Ocean Routes in United States Foreign Trade*. (Washington, Gov. Print. Off., 1930, Trade Promotion Series, 96) 33 pp.
- Day, Clive. *A History of Commerce*. Rev. and enl. (New York, Longmans, 1923) 676 pp.
- U. S. Coast Guard. *International Ice Observation and Ice Patrol Service in the North Atlantic Ocean*. (Washington, Gov. Print. Off., Annual)
- U. S. Hydrographic Office. *Telegraph Chart of the World Showing Submarine Cables, Principal Landlines, and Radio Stations*. (Washington, 1925, Charts 2180 a b c)
- National Advisory Committee for Aeronautics. *Bibliography of Aeronautics*. (Washington, Gov. Print. Off., annual)
- Spaulding, R. H. *Books on Aeronautics*. A bibliography of books likely to be of use in elementary and secondary schools. (New York, Daniel Guggenheim Fund, 1928) 40 pp.

VII. PARKS

The publications of the National Park Service are the chief source of information for our national parks, and though some of the volumes are now almost twenty years old, the guidebooks for the western states issued by the United States Geological Survey are still the best available.

- U. S. National Park Service. 1. *Rules and Regulations*. 2. *Circulars of General Information*. 3. *Glimpses of our National Parks*. 4. *Glimpses of our National Monuments*. (Washington, Gov. Print. Off.)
- U. S. Geological Survey. *Guidebook of the Western United States*. (Washington, 1915-1922, Bulletins, 611-614, 707) Part A. The Northern Pacific route, with a side trip to Yellowstone Park, by M. R. Campbell and others, 1915, 218 pp. Part B. The Overland route, with a side trip to Yellowstone Park, by W. T. Lee and others, 1915, 244 pp. Part C. The Santa Fe Route, with a side trip to the Grand Canyon of the Colorado, by N. H. Darton and others, 1915, 200 pp. Part D. The Shasta route and coast line, by J. S. Diller and others, 1915, 142 pp. Part E. The Denver and Rio Grande western route, by M. R. Campbell, 1922, 266 pp.
- Lobeck, A. K. *A Popular Guide to the Geology and Physiography of Allegany State Park*. (Albany, 1927, New York State museum, Handbook 1) 288 pp.

- Lobeck, A. K. *The Geology and Physiography of the Mammoth Cave National Park*. (Frankfort, 1928, Kentucky Geological Survey, VI, Pamphlet XXI) 68 pp.
- U. S. Bureau of Labor Statistics. *Park Recreation Areas in the United States*. (U. S. Bureau of Labor Statistics Bull., No. 462, 1928) 95 pp.

VIII. PLACE NAMES

The question of geographic names is always a fascinating one, and there is a vast literature on the subject. The decisions of the United States Geographic Board are the chief source of information for the spelling of local names, and the lists issued by the Permanent Committee for British Official Use form a useful source of information for foreign ones.

- U. S. Geographic Board. *Fifth Report, 1890-1920*. (Washington, Gov. Print. Off., 1921, supplements to date) 492 pp.
- Permanent Committee on Geographical Names for British Official Use. [Lists]. (London, Royal Geog. Soc., 1921—)
- Taylor, Isaac. *Names and Their Histories*. (New York, Macmillan, 1896) 392 pp.
- Von Engel, O. D. and Urquhart, J. M. *The Story Key to Geographic Names*. (New York, Appleton, 1924) 279 pp.
- Gannett, Henry. *Origin of Certain Place Names in the United States*. 2d ed. (Washington, Gov. Print. Off., 1905, U. S. Geological Survey. Bull. 258.)

IX. METHODOLOGY

A useful bibliography of recent literature on the teaching of geography is issued by Clark University. The publications of the Office of Education may be located in the Document catalogue noted above. The *Education Index*, also noted above, will indicate the important current material. The June, 1918, issue of the *Journal of Geography* was devoted to source materials in geography, and although rather old, it still contains helpful suggestions.

- Branom, F. K. *A Bibliography of Recent Literature on the Teaching of Geography*. 6th rev. ed. (Worcester, Clark Univ., 1930) 47 pp.
- See also references in Section I.

X. PERIODICALS

The *Journal of Geography*, which is the official organ of the National Council of Geography Teachers, contains many studies on methodology, and subject matter is presented in such a form as to be readily utilized by the teacher.

The Journal of Geography. (Chicago, Nystrom, 1897-date)

Published monthly except June, July, and August. Sent to all members of the National Council of Geography Teachers.

Economic Geography. (Worcester, Clark Univ., 1925—)

Home Geographic Monthly. (Worcester, Home Geographic Soc., 1931—)

National Geographic Magazine. (Washington, Nat. Geographic Soc., 1888—)

The Geographic News Bulletin. (Washington, Nat. Geographic Soc., 1919—)

The Geographical Review. (New York, Amer. Geographical Soc., 1916—)

Annals of the Association of American Geographers. (Albany, 1911—)

Geography; The Quarterly Journal of the Geographical Association. (London)

The Geographical Journal. (London, Royal Geographical Soc., 1893—; preceded by *Journal and Proceedings*)

Scottish Geographical Magazine. (Edinburgh, Royal Scottish Geographical Soc., 1885—)

XI. ATLASES AND WALL MAPS

The selection of an atlas is always difficult and is dependent upon the age of the group using it and the purpose for which it is to be used. A few of the more outstanding ones are noted below.

1. Atlases

Stielers Hand Atlas. 10 aufl. (Gotha, J. Perthes, 1925)

Andrees Allgemeiner Handatlas. (Leipzig, Velhagen und Klasing, 1930)

The Times Survey Atlas of the World. (London, The Times, 1922)

Touring Club Italiano. *Atlante internazionale.* [3d ed.] (Milano, 1929)

Rand McNally. *Commercial Atlas of America.* (Chicago, reissued frequently)

Goode's *School Atlas: Physical, political, and economic, for American schools and colleges.* Fourth edition. (Chicago, Rand, 1932)

Appleton's *Modern School Atlas*, edited by George Philip and W. R. McConnell. (New York, Appleton, 1928)

Bartholomew, John. *The Oxford Advanced Atlas.* 3d ed. rev. (London, Oxford Univ. Press, 1928)

Philip's *New Systematic Atlas for General Readers.* 2d enl. ed. (London, The Geographical Institute, 1926)

Paullin, C. O. *Atlas of the Historical Geography of the United States.* (Washington, Carnegie Institution and Amer. Geographical Soc. In press. Carnegie Institution. Publ. No. 401, 1932)

2. Wall Maps

American Geographers' Political Maps. (Chicago, Nystrom)

Atwood Regional-Political Maps. (Chicago, Nystrom)

Denoyer-Geppert Series J and Series S. (Chicago, Denoyer-Geppert)

Finch Economic Geography Maps. (Chicago, Nystrom)

Goode Political and Physical Maps. (Chicago, Rand)

- Haack, *Grosser geographische Wandatlas*. (Gotha, Perthes: Nystrom American agent)
- Kuhnert Relief-like maps. (Chicago, Nystrom)
- Langhans *Wandkarten zur Wirtschafts-und Kolonialbewegung*. (Gotha, Perthes)
- Philips' Comparative Wall Atlas Maps. (London)
- Von Sydow-Habenicht, *Methodischer Wandatlas*. (Gotha, Perthes)
- Whitbeck-Finch Political Maps. (Chicago, Nystrom)

XII. GAZETTEERS

There is no up-to-date gazetteer. Chambers is a convenient small gazetteer and Lippincott's one of the better larger ones.

Chambers' Concise Gazetteer of the World: pronouncing, topographical, statistical, historical, ed. by David Patrick, assisted by William Geddie. New ed. (London, Chambers, 1914) 768 pp.

Lippincott's New Gazetteer; a complete pronouncing gazetteer or geographical dictionary of the world, ed. by Angelo Heilprin and Louis Heilprin. (Philadelphia, 1906) 2053 pp.

The later editions are reprints of the 1906 edition with a conspectus of the later census figures of the United States.

Chisholm, G. G. *Longmans' Gazetteer of the world*. (London, Longmans, 1902) 1788 pp.

SECTION VI
INVESTIGATIONS IN THE TEACHING OF
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CHAPTER XXVIII

EIGHTY-TWO STUDIES IN THE TEACHING OF GEOGRAPHY CLASSIFIED BY CONTENT AND TECHNIQUE, WITH SELECTED SUMMARIES

NORAH E. ZINK
Salt Lake City, Utah

I. PURPOSE OF THIS STUDY

This survey was undertaken with a view to discovering the amount and nature of scientific work that has been done in the field of geography teaching. Much of such work is in the form of theses presented at various institutions of learning in partial fulfilment of requirements for higher degrees; the compiler has examined this material so far as it was available.

II. MEANS OF LOCATING STUDIES

In order to find what work had been done in this field, bulletins from the following institutions were used:

1. Bureau of Education, U. S. Department of Interior, Washington, D. C.
2. List of American Doctoral Dissertations, issued annually 1912-1926; U. S. Library of Congress.
3. A List of Titles of Masters' and Doctors' Theses in Education Accepted by Colleges and Universities, College of Education, University of Illinois, Urbana, Illinois.
4. University Bibliography, 1927, Columbia University, New York City.
5. Research and Publication, 1923-26, Virginia Polytechnic Institute, Blacksburg, Virginia.
6. National Research Council, Washington, D. C.

Indexes and magazines were examined to find published articles, and letters were sent to the deans of the Schools of Education of the leading universities and teachers colleges asking for the names of studies made in this field. These studies were borrowed from the college libraries.

The material here presented consists of: (III), a list of titles and authors of the investigations examined; (IV), a description of the method of classification used; (V), a table classifying the topics of the studies and the techniques employed; (VI), a brief survey of pre-

vious research; (VII), abstracts and comments on several of the studies; (VIII), summaries of findings; and (IX), conclusions.

III. LIST OF 82 TITLES IN THE TEACHING OF GEOGRAPHY¹

1. Alexander: "The Teaching of the Geography of the South." (Master's thesis, George Peabody College, 1930)
2. Armentrout and Whitney: "Types of geography courses offered in teachers colleges," *Jour. of Geography*, 29: Dec., 1930.
3. Augustine: "The Development of Supplementary Reading in Connection with Elementary School Geography Courses." (Master's thesis, Univ. of So. California, 1926)
4. Bagley: "The determination of minimum essentials in elementary geography." *Fourteenth Yearbook* of this Society, Part I, 1915.
5. Barthelmess: "Geography testing in Boston," *Jour. of Educ. Research*, 2:1920.
6. Betts: "Geography and mental images." *Elem. Sch. Teacher*, 3:1903.
7. Boyle: "The History of Geography as a Subject in the Curriculum of the Elementary School from 1776 to 1860." (Master's thesis, Univ. of Chicago, 1921)
8. Branom-Reavis: "The determination and measurement of the minimum essentials of elementary-school geography." *Fourteenth Yearbook* of this Society, 1915.
9. Brown: "Trends in the Teaching of Geography as Revealed by Text-books." (Master's thesis, Univ. of Chicago, 1931)
10. Chapman: "Geography with Special Reference to its Organization and Teaching in England." (Doctor's diss., Harvard Univ., 1922)
11. Clark: "A Curriculum in Elementary Geography." (Master's thesis, Univ. of Nebraska, 1918)
12. Cooper: "Status of geography in the normal schools of the Western States, Middle States, Eastern States." *Jour. of Geography*, Nov., 1919; Sept., 1920; Sept., 1921.
13. Courtis: "Measuring the effects of supervision in geography." *Sch. and Soc.*, 10: July, 1919.
14. Crandall: "The Contribution of Books of Travel to Geography in the Junior High School." (Master's thesis, Colorado State Teachers Coll., 1927)
15. Crawford and Grinstead: "The use of the excursion in teaching commercial geography," *Jour. of Geography*, 29:1930.

¹ No attempt was made to list investigations in geography which formed only a part of other larger investigations. Among these are Stratemeyer-Bruner, *Rating Elementary Courses of Study*, and Charters, "A Short-Cut in Tabulation," reported in his *Curriculum Construction*. No effort was made to find research work done in foreign countries, but two of these studies have been included, Nos. 58 and 82. Some investigations into the social studies touched so little upon geography that they have not been included.

16. Cunningham: "A Study of Word-Content of Five Elementary Geographies." (Master's thesis, George Peabody Coll., 1930)
17. Davis: "The Relation of the Text to the Pictures in Two Types of Elementary Geographies." (Master's thesis, Univ. of Pittsburgh, 1930)
18. Dodge: "A study of geography in normal schools." *Jour. of Geography*, 14: April, 1915.
19. Fish: "The Aims and Content of Junior-High-School Geography." (Doctor's diss., Univ. of Wisconsin, 1927). Summarized in *Jour. of Geog.*, 26: Nov., 1927.
20. Frost: "Place Geography Achievement in the Elementary Geography Classes of the University, Teachers College, and the Liberal-Arts College." (Unpublished, Oberlin College)
21. Gill: "A Determination of the Present Status and Trends of the Theory Involved in the Teaching of Geography in the Elementary Schools as Indicated in Courses of Study." (Doctor's diss., New York Univ., 1927)
22. Gibbs: "The pedagogy of geography," *Pedagog. Seminary*, 14:1907.
23. Gregory and Spencer: "A geography test for sixth, seventh, and eighth grades." *Sch. and Soc.*, 15: April, 1922.
24. Halverson: "Geography in teachers colleges." *Education*, 49: December, 1928.
25. Hilliard: "Status of Geography in American Elementary Schools." (Master's thesis, State Univ. of Iowa, 1915)
26. Hoppes: "Ability of Pupils to Read Pictures for Geographic Purposes." (Master's thesis, Univ. of Chicago, 1930)
27. Jones: "Preparation of Teachers of the Social Studies." (Master's thesis, State Teacher's Coll., Greeley, Colorado, 1925)
28. Kenyon: "Consideration of geography texts." *Elem. Sch. Teacher*, 6:1906.
29. Knoelk: "A Course of Study in Geography." (Master's thesis, Univ. of Wisconsin, 1925)
30. Kueneman: "The Effect of Vocabulary in Reading Geography Textbooks." (Master's thesis, Univ. of Iowa, 1931)
31. Lackey: "A Measurement Scale in Geography." (Master's thesis, Univ. of Nebraska, 1920)
32. Lafranz: "A Study of Duplication in the Elementary Course in Geography." (Master's thesis, Tulane Univ., 1928)
33. Laing: "An Analysis of the Content in Elementary Geography and Its Conversion into Objective Tests." (Master's thesis, State Univ. of Iowa, 1930)
34. Larsen: "An Objective Method for Selecting Appropriate Geographical Readings for Fourth Grade Pupils." (Master's thesis, Univ. of Chicago, 1925)
35. Levine: "A Comparison of Memory by Visual and Auditory Presentation in the Learning of Geography." (Master's thesis, Coll. of the City of New York, 1927)

36. Lord: "The Ability to Make Geographical Uses of the Ideas of Longitude and Latitude." (Master's thesis, Univ. of Chicago, 1928)
37. Mackie: "A Study in the Geography of the United States for Nebraska High Schools." (Master's thesis, Univ. of Nebraska, 1929)
38. Mandeville: "Children's Interest in Two Types of Reading Material Used in Geography." (Master's thesis, Univ. of Chicago, 1930)
39. Mangan: "Measurement of the Attainments of Pupils in United States Geography." (Master's thesis, Univ. of Chicago, 1917)
40. Mason: "The Evolution of Maps in Elementary Geography." (Master's thesis, George Peabody College, 1930)
41. Mathewson: "Some results with the Hahn-Lackey Scale in Geography." *Jour. of Educ. Research*, 9:1918.
42. McDonald: "Methods in the Teaching of Geography." (Master's thesis, Univ. of So. California, 1928)
43. Mears: "What do college students know about world geography?" *Sch. and Soc.*, 20:1924.
44. Montana State Committee on Research in Geography; Duboc: "What should a geography contain?" *Jour. of Geography*, 28: October, 1929.
45. Moore: "An analysis of study questions as found in textbooks for the intermediate grades." *Elem. Sch. Jour.*, 27: 1926.
46. Neveln: "Reading Comprehension as Related to Achievement in Geography." (Master's thesis, State Univ. of Iowa, 1927)
47. Neville: "A Study of Outcomes in Education Through Geography Teaching." (Doctor's diss., Univ. of Pennsylvania, 1927)
48. Normal School Committee: "Report of the Normal School Committee of the National Council of Geography Teachers." *Sch. and Soc.*, 14:1921.
49. Osburn: "The supervision of teaching in geography." *Jour. of Educ. Research*, 11:1925.
50. Osburn: *Are We Making Good at Teaching Geography?*
51. Packard: "The Trend of Geography in the Secondary School Curriculum." (Master's thesis, Univ. of Akron, 1927)
52. Pease: "One Measure of the Relative Value of Geographic Terms." (Master's thesis, State Univ. of Iowa, 1929)
53. Phillips: "The Development of Methods in Teaching Modern Elementary Geography." (Master's thesis, Univ. of Chicago, 1910)
54. Platt: "Aids for the Teacher of Geography." (Master's thesis, Teachers Coll., Columbia Univ., 1931)
55. Prall: "The Construction of Tests to Determine Whether the Major Objectives of Fourth-Grade Geography Have Been Obtained." (Master's thesis, Univ. of Chicago, 1926)
56. Reeder: "A Method of Directing Children's Study in Geography." (Doctor's diss., Teachers Coll., Columbia Univ., 1925)
57. Reinoehl: "A study of seventy-five courses of study in geography." *Jour. of Geography*, 8:1910.
58. Reynolds: *The Teaching of Geography in Switzerland and North Italy in 1898.* (Putnam, New York, n.d.)

59. Ridgley: "Twelve hundred selected place names," *Jour. of Geography*, 25: Sept., 1926.
60. Ridgley: *A Study of Children's Learning about Places*. (Clark University, Worcester, 1928)
61. Roseberry: "An Analysis of Textbooks in Elementary Geography." (Master's thesis, Univ. of Chicago, 1930)
62. Rugg and Hockett: "Objective studies in map location," *The Third Year Book, Dept. of Superintendence, N. E. A.*, 1925.
63. Scott: "A Study of the Geographic Unity of the Corn Belt." (Master's thesis, Univ. of Nebraska, 1926)
64. Shaffer: "The Derivation and Analysis of a Vocabulary in World Geography." (Master's thesis, Univ. of Pittsburgh, 1930)
65. Shearer: "A Laboratory Course in High-School Geography." (Master's thesis, Univ. of Wisconsin, 1929)
66. Shrode: "A Catalog Study of Geography in Educational Institutions above the High School." (Master's thesis, Univ. of So. California, 1927)
67. Skinner and Rich: "Visual aids in geography: an experiment," *Elem. Sch. Jour.*, 25: 1925.
68. Stevens: "Trends in the Teaching of Geography as Revealed by Examination of Textbooks over a Period of Sixty Years." (Master's thesis, Univ. of Cincinnati, 1929)
69. Stevens and Ristow: "The Status of Geography in Universities, Teachers Colleges and Liberal-Arts Colleges: a Comparison." (Oberlin College, unpublished)
70. Stevenson: "A problem test in geography," *Jour. of Educ. Research*, 5; April, 1922.
71. Symonds: "Geography in high schools," *Jour. of Geography*, 28: 1929.
72. Thomas: "A Study in Minimal Essentials of Geography for the Elementary Schools." (Master's thesis, Univ. of Indiana, 1917)
73. Tilley: "A Diagnostic Study of a Test on Map-Reading Abilities." (Master's Thesis, Univ. of Pittsburgh, 1929)
74. Van Well: "An Evaluation of Norms for the Selection of Geography Textbooks." (Master's thesis, Cath. Univ. of America, 1924)¹
75. Wang: "An Analytical Study of Elementary Geography." (Master's thesis, Univ. of Chicago, 1918)
76. Washburne: "Basic Facts Needed in History and Geography," *Twenty-Second Yearbook of this Society*.
77. Waters: "Objectives and Status of Geography in the Junior High School." (Master's thesis, Univ. of Nebraska, 1928)
78. Whitbeck: "Where shall we lay the emphasis in teaching geography?" *Education*, 31:1913.
79. Wilcox: "An Analysis of Recent Trends in Geography of the Elementary School." (Master's thesis, Cornell Univ., 1927)

¹ The study made by Sister Van Well could not be obtained by the author of this chapter.

80. Wilcox: "Fusion Courses in the Social Studies." (Doctor's diss., Cornell Univ., 1931)
81. Wilson: "Fusion of Social Studies in the Junior High School." (Doctor's diss., Harvard Univ., 1931)
82. Young: "Children's travel interests." *Studies in Education*, 2: 1902.

IV. METHOD OF CLASSIFICATION BY TOPICS AND BY TECHNIQUES

After examining several studies, the following classifications were decided upon.

1. The topics considered in the foregoing 82 studies were classified under these five major headings: (a) Curriculum-Making; (b) Methods of Instruction; (c) Measurement of Results; (d) Organization and Selection of Materials; and (e) Preparation and Supervision of Teachers.

If a study lay partly in one field and partly in another, that fact was shown by including it under two headings, for example, in the study made by Prall, No. 55, he is interested not only in making tests but also in measuring results.

2. The general techniques employed by those who conducted these 82 investigations whose reports I have studied were classified under the following eleven headings:¹

- a. *The Personal Interview.* This technique consists of consulting and talking with teachers, educators, and others concerning the matter at hand. Example: No. 42. McDonald: *Methods in the Teaching of Geography*.
- b. *The Consensus.* In employing this technique the opinions of various persons are obtained by distributing questions. Example: No. 51. Packard: *The Trend of Geography in the Secondary School Curriculum*.
- c. *Logical Analysis.* In this a subjective analysis of material is made by the worker. Example: No. 47. Neville: *A Study of Outcomes in Education Through Geography Teaching*.
- d. *Review and Compilation.* In this technique the history of geography or geography teaching is traced, or a compilation of items is made. Example: No. 53. Phillips: *The Development of Methods in the Teaching of Modern Elementary Geography*.

¹These techniques are based on, and are similar to, those used in the analysis of research studies in arithmetic made in the *Twenty-Ninth Yearbook* of this Society, 1930.

- e. *Analysis of Textbooks and Other Books.* Example: No. 68. Stevens: *Trends in the Teaching of Geography as Revealed by Examination of Textbooks Over a Period of Sixty Years.*
- f. *Analysis of Courses of Study.* Example: No. 21. Gill: *A Determination of the Present Status and Trends of the Theory Involved in the Teaching of Geography in the Elementary Schools as Indicated in Courses of Study.*
- g. *Analysis of Newspapers and Magazines.* Example: No. 4. Bagley: *The Determination of Minimum Essentials in Elementary Geography.*
- h. *Analysis of Documents and Other Papers* (catalogs, reports of committees and other reports). Example: No. 66. Shrode: *A Catalog Study of Geography in Educational Institutions Above the High School.*
- i. *Testing.* This is the procedure used when the investigator tests to measure the status as he finds it, but does not set up any special scheme of training. Example: No. 36. Lord: *The Ability to Make Geographical Uses of the Ideas of Longitude and Latitude.*
- j. *Special Training.* Here the investigator sets up some special form, or course, of training and studies its effects. (Where paired groups are used for comparison, the technique used is classified as k.) Example: No. 60. Ridgley: *A Study of Children's Learning about Places.*
- k. *Controlled Group Experimentation.* Here both special training and testing are used, but this technique differs from the preceding one in that training has been given in different ways to various groups and comparison of the results is made. Example: No. 35. Levine: *A Comparison of Memory by Visual and Auditory Presentation in the Learning of Geography.*

V. THE TABULAR CLASSIFICATION

The reader will be able easily to gather from the accompanying table the general facts about the topics and the methods that have been featured in the investigations made hitherto in the field of geography. Attention may be drawn here to certain additional points of interest, particularly in the chronological development of the 82 studies.

The first study of the teaching of geography listed in our table, that by Reynolds, an Englishwoman, dealt with methods of teaching geog-

raphy in Switzerland and Northern Italy in 1898. The second study, made in 1903, is also that of an Englishwoman, Sarah Young, who attempted to find children's attitude toward travel. From 1903 until 1925 there were, on an average, about two studies each year, but extended investigation in this field dates from about 1925. This increased interest in the investigation of geographic education is coincident with increased attention given to similar studies in arithmetic.¹ The first thesis on geographic teaching was written in 1910, but it was not until 1925 that masters' theses and doctors' dissertations became numerous in this field; as is evident in Table II; indeed, forty of the fifty theses have appeared since 1924.

TABLE II.—DATES AND FORM OF PUBLICATION OF 82 STUDIES

Dates	Articles in Periodicals	Theses	Books	Total
Before 1912	5	1	1	7
1913-1914	1			1
1915-1916	3	1		4
1917-1918	1	3		4
1919-1920	2	2		4
1921-1922	4	2		6
1923-1924	3	1		4
1925-1926	4	7		11
1927-1928	1	13	1	15
1929-1930	4	13		17
1931-1932	1	7	1	9
Total	29	50	3	82

The chief field of interest has been content; twenty-two studies are in this field, seven dealing entirely with the determination of minimal essentials, seven with the history, status, and trends of geography, eight with the making and giving of tests. Aside from two studies dealing with the history and trends of methods, no studies were made in this field until 1925. Interest is still shown in the later period, in history, status, and trends of geography, and in testing, but several studies were made in methods, in the organization and selection of material and in the preparation and supervision of teachers of geography. (See Table III for convenient evidence of these trends in investigation.)

By far the most popular technique has been that of analysis of materials. For this analysis, textbooks and courses of study are most

¹ See *Twenty-Ninth Yearbook* of this Society, 1930, p. 446.

TABLE III.—TOPICS OF EIGHTY-TWO STUDIES GROUPED BY THREE-YEAR PERIODS

Topic	Periods						
	To 1912	1913 -17	1918 -20	1921 -23	1924 -26	1927 -29	1930 -32
Minimal Essentials		3	1	1	2	1	2
Testing	1	1	2		2	2	2
Status		2		2		5	2
History of Geography	1			2		2	2
Making of Tests			1	2			1
Textbooks	1		1		1		1
History of Methods	2				1	2	
Attitude to Geography	1					1	1
Making Course of Study			1		1		
Preparation and Supervision			1		2		
Methods	1				3	2	3
Analysis of Difficulties						1	3
Supplementary Material					2	1	
Determination of Objectives						2	
Organization of Content						1	2
Determination of Content						1	
Totals	7	6	7	7	14	22	19
							82

commonly used. Other techniques most frequently used are testing and the questionnaire.

VI. SUMMARIES OF FINDINGS

It is our intent in this section to bring together under various rubrics some of the significant outcomes of the 82 studies we are considering. In the following section (VII) will be found more extended abstracts of ten of the studies that seem especially significant for the teaching of geography, together with some comments by the writer of this chapter.

1. History and Trends of Geography

Phillips (53)¹ says that, since 1600, modern school geography has passed through three distinct periods. In the first period geography is a study of charts and maps for the purpose of locating land and water forms. These early geographies also included a considerable descriptive matter relating to these typical land and water forms, and some statements about the plants, animals, and races of men. It is probable that this early geography grew out of the ancient astronomical geography that had been taught in the universities for centuries. At any rate this unorganized, unscientific type of geography prevailed till about 1800. Comenius was among the first to advocate

¹Numbers in parentheses following authors' names refer to the "List of 82 Titles in the Teaching of Geography," Section III of this chapter.

a more rational method of study and the selection of more valuable material for that study than the "Place and Book" geography then prevailing. Rousseau, Pestalozzi, Krüsi, and Ritter also objected to this formal study of books and maps.

In the second period physiography is made the important factor underlying geography. This change occurs after Ritter begins the study and teaching of geography in the University of Berlin. Geography is made a science that treats of the earth and its inhabitants, and very soon his theories are adopted in both Europe and America. Moreover, they continue to dominate till the close of the nineteenth century. Ritter had studied under Salzman. He also was greatly influenced by Alexander von Humboldt.

The third period may be called the period of industrial, or economic, geography. During the last decade we have heard a great deal about this form of geography—this is a perfectly natural tendency, in that it is taking some of the emphasis off the physiographic aspects of geography and putting more on the problems growing out of human relations.

Notwithstanding the great industrial progress of Germany in the last few years the course of study for the elementary school, says Phillips, has been very little changed, and in fact it seems fair to say that Ritter's geography still prevails. However, some important changes have taken place in the secondary-school curricula. This is especially true in the *Realschule*. Also in France considerable time is given to the discussion of commercial geography. At present there is a very definite movement in England toward economic geography, owing largely to interest that the universities have taken in the matter and particularly to the publications that come from Oxford.

Boyle (7) finds that in 1776 geography in the United States was taught only incidentally, and as a part of navigation, astronomy, and academics. By 1800, however, the subject had gained recognition and was taught as a separate course in a number of elementary schools and academics. So well grounded was this recognition that, even in the face of opposition in some quarters, rapid growth took place after 1820, a growth that led after 1830 to the enactment of laws requiring the teaching of geography in the elementary schools.

Stevens (68) states that the evolution of geography has been a continuous one. The periods of evolution and their outstanding features are (1) 1866-1883, the greatest quantitative emphasis upon locational geography; (2) 1881-1902, a period of vigorous efforts of reform in geography textbooks; locational geography declined; physical geography assumed primary importance; and (4) 1904-1927, a period of emphasis upon economic and human geography.¹

Mason (40) investigated the evolution of maps in thirty-two elementary-geography texts copyrighted between the years 1845 and 1929. The maps were classified according to 31 bases, such as agricultural distribution, cities, climate, direction, forest, harbors, historical, etc.

¹The reader is referred for further material to Chapter I of this Year-book.—A. E. P.

In one geography published in 1845 there was, in comparison with other geographies, much space given to maps. Only three kinds of maps were used, however, and the political map ranked highest.

The geographies published between the years 1858 and 1896 showed very few changes in types of maps. A few texts did contain new kinds of maps, such as a small map naming directions along meridians and parallels, a map of zones, and a map showing the relief hemisphere that was used in geographies more or less continuously from 1896 to 1928.

In 1896 agricultural, city, outline, physical, physical-political, physical-product, product, and relief maps appeared for the first time. Between the years 1900 and 1905 climatic and transportation maps came into use. In textbooks published between 1907-1913 were introduced forest, mineral, and racial maps.

There was an increase in the number of maps used in books published between 1921 and 1928. New types used in this period were maps of harbors, irrigation, national forest, political-economic, and dot maps showing the distribution of products.

No definite trend is discernible in the percentage of space given to maps. In the percentage of space given to the different kinds of maps, the political map ranked first until 1921, when the physical-political map became the most popular.

The whole field of geography has changed in recent years from what were purely descriptive toward interpretative phases. This is evidenced by the following conclusions reached from the maps examined in the textbooks: (1) a larger number of books since 1921 give a greater amount of space to maps than those published before this date; (2) there has been a noteworthy increase in the use of different kinds of maps in the geographies of later years; (3) the percentage of space given to maps varies with the different books, but in the latest publications the percentage has generally decreased; (4) in recent years the use of the physical-political map has increased in textbooks, while that of the true political map has decreased.

2. Status of Geography

In a study, made in 1910, of seventy-five courses of study for elementary schools representing both city and state schools, *Reinoehl* (57) shows that geography was usually of the two-cycle type and was taught in grades three to seven with about half the schools giving geography in the eighth grade, and only a few having it in the ninth grade.

A similar study, made by *Hilliard* (25) in the same year, shows geography taught in all grades from one to nine, but usually introduced in the fourth. Selected topics showed a wide variation in grade occurrence.

From questionnaires concerning the status of geography answered by eighty secondary schools in Ohio and from answers of experts in educational science, geography, and public-school administration concerning their attitude toward geography in the secondary-school curriculum *Packard* (51) in 1927 draws the following conclusions: (1) The point of view of the leaders is in

advance of the practice in the state of Ohio at that date. (2) Only eighty-three percent of the schools had geography in the secondary school; all fifteen of the leaders believed geography should be found there. (3) Nearly fifty percent of the schools had but one semester of geography and the rest but two or three semesters; all the educational leaders but one believed geography should be found in two or more years of the secondary school. (4) Reports from sixty-seven Ohio high schools show that commercial geography is the most commonly offered of the geography courses. The educational leaders favor either physical and commercial geography combined or a course in geographic principles that would permit both to be taught. They generally agree that a basis of physical geography is necessary for a further study of the subject. (5) Eighty-eight percent of the schools reported that the teachers were not trained for geography teaching, yet the leaders imply that considerable special training is necessary in order to realize their goal.

The study by *Symonds* (71), made in 1929, reports, from questionnaires returned by 289 cities, that 92 of these cities have no courses in the high school and that only 55 have more than one course. The most popular course reported is commercial geography, which is usually given in the tenth year; physical geography is second in popularity, occurring usually in the eleventh year.

TABLE IV.—STATUS OF GEOGRAPHY IN TEACHER-TRAINING INSTITUTIONS
(Based on the studies of Dodge (18), Cooper (12), Halverson (24) and
Armentrout and Whitney (2))

STUDY	Year of Study	Number of Schools Reporting	Percent of Schools Having Geography	Average Number of Courses Offered	Emphasis Inclining Toward	Maximum Requirement	Number of Schools Offering Electives
Dodge	'15	144	91	1.5	Review Courses	3	76
Cooper							
Western States	'19	22	86	3.5	Methods Slightly	3	12
Middle States	'20	58	96	5.5	Content Decidedly	3	45
Eastern States	'21	22	95	2.5	Content	2	4
Halverson	'28	83	..	7.8	In East, Lacks Content	..	..
Armentrout and Whitney	'30	137	..	7.8	Regional and Economic Courses	..	..

Table IV, based on four studies, shows the progress geography has made in the normal schools of the country in the last fifteen years. Gains were made in the number of schools offering geography and in the number and value of the courses offered.

The Normal School Committee of the National Council of Geography Teachers (48) also made in 1921 a report on the status of geography in teacher-

training institutions. This committee received answers to a questionnaire sent to 75 normal schools in 32 states. Of the 5497 graduates that year from these institutions, 15.7 per cent had no geography in normal school and only 12 per cent had a year's work, while the others had only one course lasting from 12 to 24 weeks.

In 1914 *Dodge* (18) said that the amount of training in geography was, in general, inadequate in quantity and often in quality, as a preparation for teaching. Of the 200 required courses, 50 were high school in type and 40 were either methods courses or regional courses. Of the latter, the larger number consisted merely of review courses of elementary geography.

Cooper (12), in 1921, found very little variation in the number of courses or amount of work required in different sections of the country with the possible exception of the South. In the West, the schools prepared mostly for elementary teaching. The number of elective courses was greatest in the middle states, because in the middle west they had more geography teachers and larger enrollments, and geography stood as an independent department in nearly every normal school.

Jones (27), in 1925, found more universities and teachers colleges offering courses in "Industrial Geography"; next in importance were "Principles of Geography," "World Geography," "United States." The schools offered about one course for each field of geography. "Apparently the teachers are being trained, perhaps poorly, in history, economics, sociology or some other subject with the hope that they may be able to teach geography in the secondary school. One might conclude from this condition that the universities and teachers colleges are weaker in this branch of the social studies than in the others. The great majority of the courses in the departments of geography . . . are of content type."

Halverson (24), in 1928, found that the faculty lists of teachers colleges showed odd combinations of subjects taught by teachers and believes it safe to assume that in many cases the teacher is better prepared in the other subjects taught than in geography.

In the survey of catalogs of teachers colleges made in 1930 *Armentrout and Whitney* (2) found that in most teachers colleges the geography department appeared to be a service department. Its main function was to supply courses required of majors in other departments, particularly for those majoring in elementary education. The major aim of the department was not to train specialists in geography but rather to equip teachers who were to teach geography for the elementary school. Only a few specific courses for junior-high-school teachers were offered. Perhaps this was due to the apparent trend in junior high schools to offer social-science courses rather than geography. In this reorganization the physical and mathematical phases of geography are often treated in general science courses.

Shrode (66) found, in 1928, that some work in geography was practically universal in the curriculum of normal schools and teachers colleges. Courses dealing with the teaching of geography were listed most frequently by these teacher-training institutions. Many of the normal schools, but fewer of the

four-year teachers colleges, include methods of teaching geography with the general subject matter of geography.

Of the 398 institutions studied by Shrode, 318 offered geography under 60 different catalog headings, suggesting a wide diversity in the departmental placement of geography courses. Courses were most frequently offered in the departments of geology, geography, and economics. Prerequisites to geography, if any were named, were found not to be uniform in the various colleges.

There was a wide range in the number of geography courses offered by institutions of comparable size. The only observable difference in geography courses offered by institutions located in different parts of the country pertained to local geography. Teachers colleges and normal schools, in particular, stressed the geography of the home state or region.

In a study of 364 catalogs of universities, liberals-arts colleges, and state teachers colleges, *Stevens and Ristow* (69) found that 127 schools, or 35 percent of those investigated, gave no course in geography. One hundred seven schools had separate departments of geography, while the others placed the subject either in a combined geography and geology department, the geology department, the social science department or the department of science, earth science, or natural science.

3. Determination of Content

Some of the earliest research in the teaching of geography was for the purpose of determining minimal essentials. These essentials were to be chosen because they were important and a knowledge of them was necessary for the well-educated person. The minimal essentials sought during this early period were place names and items considered to be of enough importance that children should know what they were and should be able to locate the places.

With the development of the scientific approach to educational problems we find attempts to answer questions like "What shall we teach?" and "What shall we test?" by the use of quantitative data. Three means of deciding the importance of items were commonly used: (a) frequency of reference in books, magazines, papers, and courses of study; (b) importance as disclosed by statistics; and (c) ranking by experts.

The first use of determination of minimum essentials for geography by means of objective data seems to have been made by *Gibbs* (22) in 1907 when he counted references pertaining to cities, countries, people, lakes, islands, products, industries, rivers and mountains found in a week's issue of two newspapers.

The following investigators used the reference method—*Gibbs*, *Bagley*, *Lackey*, *Washburne*, *Ridgley*, *Osburn*, *Roseberry*, *Pease*, *Laing*. Experts were consulted by *Whitbeck*, *Stevenson*, and *Branom and Reavis*. *Thomas* and

Rugg and Hockett used both references and statistics. Gregory and Spencer used references and the advice of experts. Lackey, Gregory and Spencer, Stevenson, and Laing sought minimal essentials to formulate tests, Osburn to help in the supervision of geography.

The study by *Roseberry* (61) ranked the amount of space given names of places in six textbooks of elementary geography and then compared this ranking with that made by Rugg and Hockett. In the study are tables which give the ranking assigned by *Rugg and Hockett* (62) to cities of the United States, islands and archipelagoes, bodies of water, rivers, mountains and mountain ranges, and unclassified items. These tables also give the ranking found in each of the six series of books. Roseberry found only 3.2 percent perfect agreement in the ranking. Of the "upper ten" in each of the ten tables, there is agreement of 54.3 percent, and of the "upper twenty" 55.9 percent. There was little variation in the different series of textbooks as to percentage of agreement in page-space ranking with the Rugg and Hockett lists.

4. History and Trends of Methods

The earliest study in this country of methods of teaching geography was that of *Gibbs* (22) in 1907. Some of his findings are: (1) The development of geography historically and of geography textbooks shows that there has been very little change for several centuries in the kind, amount, and arrangement of facts presented as materials for instruction. The recent emphasis upon man and upon causal relations has made some change in the arrangement of materials, but very little improvement in the adaptation to the child. (2) The history of methods of teaching geography shows that the necessity of adapting them to the child was early recognized, even as far back as Strabo, but has been very little heeded in actual practice. (3) The work of the elementary schools is too closely limited to the textbook, with little regard for pedagogical order and methods of adaptation to children. (4) From the first historical records of the teaching of geography, except during the Dark Ages, observation has been considered fundamental. Strabo, Bacon, Comenius, Rousseau, Pestalozzi, and Froebel emphasized it. (5) Emphasis upon observation and sense perception led Comenius, first; then Rousseau, Pestalozzi, Ritter, and Diesterweg to make knowledge of geographic facts within the direct observation and experience of the child the basis of all geographic instruction. (6) In the adaptation of the teaching of geography some progress has been made: (a) observation and orientation in home surroundings is stressed; (b) this experience is expanded to include the whole earth; (c) facts learned in isolated groups are collected into larger groups, connected and correlated by causal connections.

Gibbs also makes this interesting observation: that for years it has been insisted that the pupil shall begin his map study by construction to scale of plan maps from actual measurement. This method usually begins with making diagrams to scale of the tops of tables and desks, then, the schoolroom and the school grounds. This work is usually begun in the second and third year, before the pupil can have any adequate idea of working with common fractions

such as arise from making measurements and reducing them to scale. It seems to be generally thought that the pupil can have no idea of a map unless he first learns to draw a diagram map in this way, while the fact is that the maps which the pupil draws are not geographic maps at all, and at this period he can make little or no use of a scale map to find distances. Why should we mention 'scale' to the child until he is capable of understanding and making use of it?

Gill (21), in 1927, twenty years after Gibbs, from his examination of elementary courses of study, arrived at the following conclusions: (1) The concepts of education in geography teaching are preparation for later life and adjustment to social and physical environment. (2) Methods are adapted to a development of uniformity and standardization, with little provision for individual differences or for development of initiative and creativeness. (3) Aims are utilitarian to a large degree and are stated in terms too general and often not clear. (4) Attempts are made in only a few cases to set up minimal essentials. (5) Textbooks are considered the chief source of material, with little or no attempt to use field study or supplementary material. (6) There is a tendency to supplant mere memory of facts with ability to grasp meanings, apply principles, arrange materials, and solve problems. (7) The ten-year or more lag of acceptance and application of theory behind its statement and exposition is apparent.

In a similar study of courses of study made the same year, *Wilcox* (79) also finds that geographic principles are receiving greater emphasis than formerly. Geographic information is no longer an isolated mass of heterogeneous material, but rather an articulated mass of geographic principles. Throughout the investigation there was revealed a noticeable tendency to humanize geography. Differences between peoples are emphasized not to reveal queerness or eccentricity, but to substantiate the principle that environment is a potent factor in causing such differences. In order that the knowledge and attitudes acquired in the geography class will function in the life of the children much worth-while activity is advocated. The children are to learn to use their geographic material by using it in solving problems. Some of the most noticeable omissions are lack of definite standards of attainment and insufficient emphasis on new-type tests.

In a study made in 1927 of the aims and contents of junior high school geography, *Fish* (19) found from the opinion of experts, from textbooks, and magazine articles that thirty-five percent of the aims stress social adjustment. In this adjustment are included such ideas as understanding human relationships, preparation for citizenship, world-mindedness, social efficiency, and culture. About sixty-three percent of the aims had to do with the development of specific habits, skills, abilities, and appreciations, while twenty-two percent stressed the growth and development of reflective thinking.

The objectives and present status of geography in the junior high school were discussed by *Waters* (77). She says that in order to justify a time allotment in the curriculum of the junior high school a subject must show that its content and its aims meet in a satisfactory manner the general aims

of education and also the objectives of the junior high school. The general aims of education were set forth in 1918 by the Commission on the Reorganization of Secondary Education in the "Seven Cardinal Principles." Educators agree that there is a need for geography in the junior high school.

A study of the objectives of junior-high-school courses of geography led her to the following conclusions: (1) the aims are not kept in mind when selecting material; (2) the objectives are extensive enough to cover the whole field of social science; (3) specific objectives are not differentiated; (4) too much is expected of the junior-high-school pupil.

Both the study by Waters and that by Fish of the objectives and content of junior-high-school geography agree that geography must justify its inclusion in the junior-high-school curriculum, that it must contribute to social adjustment, that stress should be put on the study of North America, that more attention should be put on problem-solving and activities, and that a reorganization of present courses of study is necessary to realize these aims.

Moore (45) looked for tendencies in practices of teaching by analyzing the study questions found in six geography textbooks for middle grades. The questions were grouped into two general classes, memory and thought-provoking, with minor subheads. All questions requiring independent use of facts were classified as 'thought questions.' The commonest single demand made of the pupil in the six texts was the demand of remembering and restating material read (32.2 percent of the questions). Thus 67.8 percent were thought questions of different types, of which the most frequently used were causal reasoning, reorganization of facts by grouping, comparison and contrast, and imagination. The textbooks varied greatly as to the distribution of memory and thought questions. The suggestion is made that, since such great variation is found in textbook practices, teachers need to analyze study questions in the texts for their particular grades and to evaluate the findings by comparing them with the accepted objectives of study in geography. Such analyses would be valuable both in supplementing the study questions found in the texts in use and in selecting the texts themselves.

Brown (9) made a similar analysis of study questions in thirteen series of textbooks, but instead of considering the questions from the viewpoint of psychology, the examiner viewed them from a geographical angle, looking for their contribution to geographic understanding. In thus tracing methods of teaching geography from 1907 up to the present, there is evidence of some progress: (1) instead of great masses of isolated facts, there are now facts collected and grouped into generalizations and tendencies; (2) the emphasis is now placed on man's relation to his physical environment; and (3) geography is now being taught to a large extent through activity on the part of the pupil.

5. Study Methods

There are very few scientific studies dealing with methods of teaching geography, particularly when the studies of history and trends of methods are excluded. The studies that have been made deal with

the following topics: (1) use of visual aids, (2) use of the excursion, (3) analysis of difficulties, (4) organization of materials, (5) use of questions in studying geography, and (6) collection of methods of teaching.

a. The Use of Visual Aids. The use of visual aids in teaching geography has been almost universally advocated, but few studies have been made to determine their real value: three may be mentioned.

Levine (35), in New York City, seems to think that the visual method has great advantages over the auditory.

In the investigation made by *Skinner and Rich* (67) the following conclusions are reached: The difference in attainment due to the use of visual aids is exceedingly small if measured at the end of the period of visual instruction. But there was a distinct gain, other factors being equal, in the retention of the information acquired, in interest in geography, and in 'pupil morale' in a wide sense. The more varied the forms of visual instruction used, the greater the gain. Nevertheless, differences between teachers and differences between texts gave rise to at least as great differences in results as did the presence, absence, or variety of visual instruction. An experiment lasting through at least a full school year is necessary if the effects of novelty and of change from an accustomed method are to be eliminated. Whatever the interpretation of the results—whether in terms of visual aid, in terms of novelty, or in other terms—the fact stands out that in this case there were found both a genuine gain in long-time results from visual instruction and the existence of counteracting factors sufficient to nullify the immediate gains due to the method. It is the opinion of *Skinner and Rich* that the gain due to thorough visual instruction using all the visual aids is sufficiently great to warrant expenditure of school money on them.

Wilcox (79) says that evidence concerning the value of visual aids in geography instruction is insufficient to determine their teaching worth unequivocally.

b. The Use of the Excursion in Teaching Commercial Geography. One of the methods of teaching geography is that of actually seeing the landscape or activity studied.

The benefits accruing from use of this method were tested by means of paired groups by *Crawford and Grimstead* (15) in a course in commercial geography. Results were found by them to be uniformly favorable to the excursion method and to be relatively more profitable in the case of the bright students. Suggestions as to the method of conducting an excursion are given.

c. Analysis of Difficulties. Under this heading there are two types of studies: one (by *Betts*) attempting to find out whether children had the correct concrete image of the object discussed and another (represented by several studies) analyzing vocabulary difficulties.

Betts (6) draws the following conclusions: (1) Too much is taken for granted by teachers in the matter of children's images. (2) Individual differences in children in the matter of mental images should be taken into account. (3) Perfect imagery cannot be built on imperfect perceptions. (4) Pupils of Grades 5-7 are slow in generalizing the particular illustrations that are presented to them. (5) Use of formal definitions seems to go along with faulty imaging. Teaching formal definitions before the child has clear images of those objects leads to faulty imaging.

The vocabulary studies were made for several different purposes: (a) to help in the selection of supplementary reading, (b) to discover the relation between reading comprehension and geographic understanding, (c) to help decide the grade placement of books, and (d) to help determine minimal essentials.

Larsen (34) analyzed the vocabularies of 54 widely used supplementary readers in order to find an objective method for selecting appropriate geographical readings for fourth-grade pupils. These books were rated by actual tests of reading difficulty, by comparing with the Gray standardized reading paragraphs, by determining the vocabulary burden as outlined by Pressey. The standardized reading paragraph method proved to be a reliable and practical method, and the 54 books were finally rated by this method.

Neveln's study (46) shows the relation between reading comprehension and geographic achievement.

Investigations by *Shaffer* (64) and by *Cunningham* (16) looked into the difficulty of the vocabulary used in textbooks. The two studies were similar in nature and both compared the lists of words found in textbooks with Thorndike's *Teacher's Word Book*. Such studies are of interest, not only to teachers and members of committees selecting books, but also to textbook writers.

Kueneman (30) also was interested in the child's ability to read and attempted to lessen this difficulty by changing the most difficult sections into a simple vocabulary.

The study made by *Pease* (52), while conducted in somewhat the same way as the two just named, was made to discover significant geographical terms.

6. Organization of Content

One of the problems of geography which is frequently discussed at the present time is that of the organization of subject matter. The terms 'correlation,' 'unified course,' 'fusion course' are heard frequently. There are two studies looking into this matter of fusion. The investigation of *Wilson* (81) analyses the situation, attempting to show what the fusion idea is. That of *Wilcox* (80) shows present status of these courses in cities and states where the courses have been made by the city or state systems themselves.

7. Measurement of Results

The problem of testing and the making of tests has been one of major interest. Objective tests were not introduced into the field of geography until after their use in many of the other subjects. The lack of agreement on minimal essentials makes difficult the building of standard tests in geography. Investigations have furnished types of tests that examine picture- and map-reading abilities and the attitudes of children. Many of the investigators wishing to test a certain ability found it necessary to build special tests for the purpose.¹

8. The Construction and Selection of Teaching Materials

Investigation of teaching materials has not been extensive, though the work done in determining vocabulary difficulty might be added to this category.

In 1906 *Kenyon* (28) studied textbooks with respect to make-up, maps, illustrations, content, and method. He concluded that, in the large, all the geography books then used were the same texts. The same conclusion was reached by *Gibbs* (22) in 1907 and by *Wang* (75) in 1918, when they say that authors generally agree as to the order in which the continents are treated and the amount of space devoted to each. Wang also says that various textbooks have about the same number of illustrations, that they all place emphasis on industrial geography and upon a greater use of memory than of reasoning.

There are three studies dealing with the selection of supplementary material, viz., those of (1) *Larsen* (34), who bases selection on the difficulty of the vocabulary; (2) *Augustine* (3), who lists various types of supplementary readers, leading series of readers, and a selected list of supplementary readers, with evaluations; and (3) *Crandall* (14), who selected travel books according to the way these books compared to a list of essential items taken from six commonly used texts.

Davis (17) deals with the use of pictures in texts, reporting not only the amount of space and placement of pictures but also the ideas to be learned from a study of the picture and the technique developed in the use of pictures.

VII. ABSTRACTS OF TEN SELECTED STUDIES, WITH COMMENTS

These abstracts are concerned with investigations that seem significant to the teaching of geography—because of the types of ideas dealt with, the importance of the subject examined, the nature of the technique used, or the conclusions derived. With the exception of one

¹ See the chapter in this Yearbook on testing for further discussion of this topic.—A. E. P.

study, all are based upon objective data, and their conclusions seem to have high validity. Comments by the present writer have been added to some of the abstracts.

I

BROWN, VELMA. Trends in the Teaching of Geography as Revealed by Textbooks. (Master's thesis, University of Chicago, 1931)

Purpose. To reveal, by an analysis of exercises in elementary geography textbooks published between 1890 and 1921, such trends in the teaching of geography as might be evidenced by changes in amounts of emphasis put by those exercises on (a) explanatory relationships, (b) specific types of explanatory relations, (c) facts as ends in themselves, and (d) specific types of material used as sources of those facts.

Procedure. The 55,314 questions and directions included in the introductory and review exercises in the elementary and advanced books of the thirteen series of textbooks involved were grouped into the following nine categories, and the investigator's judgment in classification was corroborated by that of fourteen adults, each of whom classified independently thirty or more of the exercises of various types:

- (1) Those which stress relations between two or more items of natural environment. For example, the question "Why is the western portion of the Great Plains poorly watered?" directs one's attention to such a relation. The correct answer involves pointing out the relation between the direction of the prevailing winds in the area, the surface of the area, and the location of the area with regard to the oceans where the winds gather moisture.
- (2) Those which stress relations between two or more human or cultural items. Human items include human characteristics, attitudes, conditions, activities, and features resulting from human activities. For example, the industriousness of the Danish people (a characteristic), the interest they display in scientific agricultural education (an attitude), the general prosperity of their country (a condition), their export of dairy products (an activity), and the crops they raise (a landscape feature) are all human items.
- (3) Those which stress relations between one or more human items on the one hand and one or more natural items on the other hand. For example, the correct answer to the question "Can you think why lumber mills are built near falls in rivers?" emphasizes the relationship between the building of lumber mills and the natural power afforded by falls in rivers.
- (4) Those which stress facts gained from maps in the textbooks, such as "Bound Bulgaria."
- (5) Those which stress facts to be gained from the reading matter in textbooks, as "What is a river basin?"
- (6) Those which stress facts to be gained from statistical tables in the textbooks, as "Determine from this table which South American country has the densest population."

- (7) Those which stress facts to be gained from graphs in the textbooks, as "How does Russia rank in the production of wheat?"
- (8) Those which stress facts to be gained from pictures and diagrams in the textbooks, as "Is the olive tree tall, majestic, light, or feathery?"
- (9) Those which stress facts to be gained from sources outside textbooks, as "Watch the smoke from a chimney on a calm winter day and tell how it rises."

Conclusions. 1. Some definite trends in the teaching of geography were revealed by the study. (No trend was steady in the sense that each new series put more or less emphasis on any one type of exercise than the preceding one,

TABLE V.—DISTRIBUTION OF NINE TYPES OF QUESTIONS AND DIRECTIONS
IN THIRTEEN SERIES OF GEOGRAPHY TEXTBOOKS

(The first six are earlier; the remaining seven, later texts.
Figures are percentages.)

Series	CN	NN	CC	MP	RM	ST	GR	PD	OS
I	3.1	4.1	0.1	37.2	52.7	—	—	1.8	1.0
II	4.0	9.9	0.9	39.6	36.3	0.3	—	2.0	7.0
III	4.2	6.0	0.4	41.0	40.6	1.5	0.2	0.2	5.9
IV	4.6	4.6	1.4	47.6	38.5	2.2	—	0.2	0.9
V	0.6	2.8	—	59.7	36.6	—	—	—	0.3
VI	4.7	4.2	—	56.6	16.3	10.6	—	2.6	5.0
Average Earlier Texts	3.3	5.6	0.5	45.6	39.1	1.4	—	1.0	3.5
VII	17.6	9.7	1.2	30.5	19.6	0.8	—	3.2	18.4
VIII	15.6	5.6	2.0	22.3	38.1	6.4	0.4	0.3	9.3
IX	7.2	4.0	0.5	33.0	42.0	2.4	—	0.1	10.8
X	7.5	4.2	0.8	22.8	64.3	0.2	—	—	0.2
XI	11.6	5.8	0.8	41.6	34.0	0.6	—	1.8	3.8
XII	15.0	5.0	2.5	38.9	21.1	2.8	—	4.0	10.7
XIII	20.5	5.5	4.2	24.9	24.4	1.2	0.4	8.4	10.5
Average Later Texts	12.5	5.3	1.5	31.7	36.7	2.0	0.1	2.1	8.1
Average All Texts	8.3	5.5	1.0	38.0	37.8	1.7	0.1	1.6	6.0

CN—Cultural-Natural type of relational exercises

NN—Natural-Natural type of relational exercises

CC—Cultural-Cultural type of relational exercises

MP—Map type of fact exercises

RM—Reading matter type of fact exercises

GR—Graph type of fact exercises

ST—Statistical table type of fact exercises

PD—Picture-diagram type of fact exercises

OS—Outside source type of fact exercises

but the total emphasis of the second group of texts as compared with that of the first is significant. In no case is the general tendency to increase or decrease emphasis on a given type of exercise shown by a steady increase or decrease of emphasis on that type in each successive series. This is to be kept in mind in considering each of the following statements regarding trends).

2. Chief among the trends evidenced by this analysis of exercises, as Table V shows, are the tendencies: (a) to decrease emphasis on facts (90.6 percent in the first or earlier group of textbooks as compared with 80.7 percent in the second or later group), and (b) to increase emphasis on relations between cultural and natural items (3.3 percent in the first group as compared with 12.5 percent in the second group).

3. Other lesser trends are those toward (a) greater emphasis on relations as a whole—cultural-to-natural, natural-to-natural, and cultural-to-cultural (9.4 percent in the first group as compared with 19.3 percent in the second group); (b) steady emphasis on relations between natural items (5.6 percent in the earlier group of texts as compared with 5.3 percent in the latter group); (c) increased emphasis on relations between human or cultural items (from 0.5 percent in the first group to 1.5 percent in the second); (d) much emphasis throughout the entire period on maps and reading matter in textbooks as the chief sources of facts (maps decreased from 45.6 percent to 31.7 percent; reading matter, from 39.1 percent to 36.7 percent); (e) slightly increased emphasis on statistical tables in textbooks (1.4 as compared with 2.0 percent); (f) very slightly increased emphasis on graphs in textbooks as sources of facts (from zero in the first group of texts to 0.1 percent in the second); (g) slightly increased emphasis on picture work and diagrammatic reading (1.0 percent in the first group of texts to 2.1 percent in the second); (h) increased emphasis on materials outside the textbooks (from 3.5 percent in the first group to 8.1 percent in the second group).

Addendum. In the light of the findings revealed by this study, the investigator inspected a number of texts published since 1921, with a view to finding whether the trends herein indicated are also evidenced in the next decade. It seemed very clear, from definite count of exercises of various types in several of the books of the 1921-1931 decade, that the tendency to increase emphasis on cultural-to-natural relations and to decrease emphasis on facts is even more marked than in the preceding decade. This apparent continued progress along the lines indicated in this study adds weight to the conclusion that the chief trends revealed in the exercises analysed represent real trends in the teaching of the subject. Of these, the two major ones are decreased emphasis on facts as ends in themselves and increased emphasis on relations as a whole and on specific relations of man to natural environment.

Comments.—This study is concerned with the important task of determining the kind of geography being taught. Since the vital point in modern geography is relationship, we are interested in the emphasis placed upon relational ideas. The investigation is of especial moment because it deals with occurrence of ideas, not merely the amount of space given to topics. The work has been carried out strictly along scientific lines. The judgment of the

investigator in classifying questions was corroborated by others. The data were objectively handled and the conclusions should be distinctly significant.

II

SHAFFER, LEWIS GAINS. "The Derivation and Analysis of a Vocabulary in World Geography." (Master's Thesis, University of Pittsburgh, 1930)

Purpose. To ascertain the nature of the vocabulary used in several of our present geography texts and to determine whether the vocabulary used is a special reason for difficulty in geography and, if so, to what extent.

Method. From three textbooks on world geography the words were tabulated, resulting in a list of 3740 words. These words were compared with the ordinary reading vocabulary as suggested by Thorndike. From the original vocabulary the general geographic terms and words were selected. A list of place names was also found.

Conclusions. There are: (1) a relatively large number of difficult words of low frequency (about $\frac{1}{3}$); (2) a small number of words of high frequency; (3) great differences among the central tendencies of the three texts; (4) a high ratio of words that are special or class words; (5) a high ratio of words not found in Thorndike's word list¹ or, if there, located in the second half of the list.

Shaffer concludes that the study of geography requires the mastery of an exceptional number of new and unfamiliar words. This is probably not due to the negligence of authors of textbooks but to the wide scope of the field to be covered and the large number of place names. Because of the large number of new words, the pupil does not master them. The difficulty of the task is obvious when it is remembered that these many new words are scheduled to be learned within one school year and in but one subject of that year's work.

III

KUENEMAN, HUBERTEEN. "A Study of the Effect of Vocabulary Changes on Reading Comprehension in a Single Field." (Master's thesis, State University of Iowa, 1931)

Vocabulary plays an obviously important part in ease of reading. Textbooks are praised or condemned, whether fairly or unfairly, on the basis of their vocabulary difficulties. Several types of vocabulary studies have been made, and apparently they are being used in preparing textbooks, since it is not uncommon to find mention of these studies in the prefaces of newer textbooks as the sources of the vocabulary employed in that particular text.

One method of simplifying subject matter is to rewrite it into the spoken vocabulary of young children.

¹ The *Teacher's Word Book* is an alphabetical list of the 10,000 words found to occur most widely from 41 different sources. The words in the first half of the list, the first 5,000, are of greater range and frequency than those in the second half.

Cunningham (16) used a similar method of investigation.

If such changes can be shown to be effective, this method offers a technique for simplifying subject matter that would be immediately usable, because source studies of children's spoken vocabularies are already available.

Purpose. The purpose of this study is to determine the effect of vocabulary on ability to read a geography textbook.

Method. (1) Selections were chosen from a geography textbook, representative of the books generally designated for study in Grades IV to VI, which was also the textbook studied in the grade in which the experiment was run. (2) The selections were rewritten into a preschool children's vocabulary. (3) Tests were constructed to measure the comprehension of each part of the selection affected by the vocabulary changes. (4) The tests were administered to two groups of pupils from the lower fourth grade in a single city system who had been roughly equated on the basis of a group reading test. The one group read the selections in the original and was tested; the second group read the rewritten selections and was tested with the same test. (5) The tests were scored and the data grouped for statistical interpretation. (6) Statistical checks were employed to determine the effect of the original and the rewritten material on comprehension.

The two selections were rewritten into a children's vocabulary by making word substitutions and by describing unfamiliar words in terms of the known vocabulary. The children's vocabulary was drawn mainly from the 2,596 words in the Vocabulary of Children Before Entering First Grade (I.K.U. List). Some words for which no equivalent was found were left unchanged, and proper names were left unchanged and unexplained.

It is not contended that some of the word changes did not detract from the simplicity and clarity of certain parts of the selections, but the judgment of four persons was secured on the suitability of the rewritten material for the purposes mentioned. The following is illustrative.

Original

About five o'clock we began to watch for the place where we were to anchor for the night. The boat does not sail at night because it is hard to see the snags and sand bars when it is dark.

Rewritten

About five o'clock we began to watch for the place where we were to fasten our boat for the night. The boat does not sail at night because when it is dark, it is hard to see the old trees in the water which might make a hole in the boat and to see the places where the water is not deep over the sand.

Conclusions. When either the entire test or parts of the test is considered, it is found that the vocabulary changes do not affect reading comprehension to a degree of difference that has statistical significance, though a few of the individual word changes appear to make the comprehension of the two rewritten selections used in this study easier for the fourth-grade children to understand—sufficient to warrant further investigations in this direction.

Although vocabulary remains a large factor in comprehension, the ability to comprehend in a content subject is not greatly facilitated by simplification by the sort of word changes made in this study.

IV

WILSON, HOWARD E. "The Fusion of Social Studies in the Junior High School." (Doctor's Dissertation, Harvard University, 1931)

The Problem. The problem with which this investigation deals has its origin in the existing confusion in the teaching of the social sciences in the junior high school. A preliminary survey of social-science courses in three hundred widely scattered junior high schools indicates a great variety of offerings; a significant revelation is the fact that approximately a fourth of the schools surveyed have adopted or are experimenting with fusion courses. The 'fusion controversy' has been insistent in the literature on social-science teaching during the past decade and a half, but there has not been any consistent effort to bring together the many tangled threads at issue. The purpose of this study is to try to reason through the merits and demerits of the 'fusion' proposals as contrasted with 'subject' proposals. The study seeks to answer two questions: (1) What is the fusion idea? and (2) Is the fusion theory sound and superior to subject theory?

The study analyzes theory, not practice, except as the latter is an aid to the understanding of theory. A basic assumption of the study is that the fusion movement has not yet made sufficient headway to warrant measuring any one course as typical of others. In fairness both to fusion and to subject courses, it seems necessary, as a first step, to analyze the theoretical bases toward which practices are striving.

What Is the Fusion Theory? In determining the nature of the fusion theory, two methods of approach were followed. First a group of ten fusion courses, representing seemingly the best and most carefully constructed of many, were selected for analysis, including content, organization, and stated aims. Second, current literature on fusion in the social studies was analyzed. These two methods of approach resulted in a formulation of the fusion 'platform' in the following terms: (1) Only such material as has direct value in developing in a pupil intelligent understandings and tolerant cooperative appreciations fitting him to engage in the activities of the life of his time shall be taught. (2) Selected subject matter in the social studies must be organized in units of experience, psychologically appealing and learnable, and corresponding as closely as possible to life situations. (3) Traditional subject boundaries shall be ignored in the construction of the social-science curriculum; subject fields not only fail to achieve the purposes of education, but interfere with the selection and organization of a curriculum that will achieve these purposes.

This statement of the fusion theory is only tentative, and it does not distinguish clearly between the fusion and the subject theory, for subject theory includes many of the points stressed in this statement of fusion.

Is the Theory of Fusion Valid and Desirable? The answer to this second question is somewhat involved, and has been pursued in three lines of thinking. First, the fusion theory was analyzed from the point of view of social science through a résumé of the rise of the fusion controversy; second, the relation be-

tween fusion and the selection of functional curriculum content was analyzed; lastly, the relation between fusion and the best possible organization of selected curriculum materials was analyzed. A summary of each analysis follows:

First, fusion arose some twenty years ago as a reaction to the rigid curriculum of the first decade of the century. Many factors stimulated the unrest; among them (1) a new educational philosophy centering about the philosophical thought of John Dewey, (2) the rise of educational psychology with its data pertaining to the nature and direction of the learning process, (3) the rise of the junior high school as a distinct school unit, (4) greatly increased concern over education for citizenship, and (5) the occurrence of far-reaching changes within the social sciences themselves, involving the rise of new social sciences in the secondary school and the reorganization and elaboration of the older subject fields.

These factors of unrest were dominant in the educational situation by the close of the World War, when reform and experimentation were in the air. While some desired no change, two groups sought reform, one by fusion, another by the rearrangement of older subjects and closer correlation among them. Hence the alternative now offered is not alone one between fusion and the traditional curriculum, but another between fusion and progressive subject courses responsive to the same social trends and influences as gave birth to fusion. A basic aspect is to be noted in this, that subjects themselves change. Although subject teachers may sometimes teach their subjects narrowly and rigidly, there is nothing in subjects themselves that is narrow and rigid.

Second, the fusion platform indicates devotion to the ideal of functionality, to general social usefulness. Obviously, all curriculum-makers have tried to be functional, but what is functional today is not what was functional a generation ago. The present attempt to establish a functional curriculum is characterized chiefly by the *particularization* of educational objectives and of corresponding curricular materials.

By the various methods of activity-analysis it may be possible to list the learnings pupils should attain, though there is always a large subjective element in such listings. But does activity-analysis, as far as it has gone, indicate that subjects are antagonistic to functionality or that fusion facilitates the construction of a more useful curriculum? In the body of the thesis, forty-three activity-analyses in the field of social science are listed, and an examination of them seems to reveal little that is incompatible with subject teaching. About half the studies made are made within subject fields. The fact that subject courses have been erected and subject textbooks written that utilize the products of all available activity-analyses and are guided by the goal of particularized functionality seems to indicate that fusion is not a necessary concomitant of the educational principle under evaluation. Analysis of Billings' *A Determination of Generalizations Basic to the Social Studies Curriculum* reveals that four-fifths of the generalizations he discovers in use among 'frontier thinkers' have originated among 'frontier thinkers' of a

single field. A study of the twenty-five most useful of Meltzer's social concepts indicates that practically all of them are treated in existing subject textbooks of the junior high school. In those cases where the concepts are not treated, they may be treated without violating subject characteristics. A basic difficulty here is that similarity of terms confuses thinking: It is assumed frequently that subject courses must be subject-centered courses—an assumption not warranted by the true nature of the social subjects. It is not impossible for a subject course to become child-centered or for a fusion course to fail to become child-centered. The handicaps of subject courses in this respect may be offset by the difficulties and problems of scholarship and pedagogy involved in creating a new analysis of knowledge.

Third, a general curriculum tendency in the last twenty years has been toward the establishment of 'natural units of learning.' Reform in the social sciences has been guided by this general tendency. Analysis of the idea of 'natural units of learning' defines such units as bodies of subject content, all the items or parts of which are *related* to a central core of thought by a *natural*, or life-like, relationship. The project and the natural unit have much in common. The discovery of natural units is one object of curricular reform, and the fusion movement professes to be a step in that direction.

But the relational strand tying data together is an elusive thing. Furthermore, all experience, all content, is related. The unitary theory is a violation of the universality of relationships, and neither units nor relations tell where the relational thread is to be broken in forming units. The criterion of naturalness as a clue to what relations are to be pursued is inadequate because of the constantly changing character of society and because of the nature and extent of individual differences. Units are not 'discovered'; they are man-made, externally and somewhat arbitrarily formed. Moreover, a unitary organization does not provide a synthesis of knowledge, but only an analysis of knowledge. Even with the best of units, whether subject or fusion, integration of unit learnings is essential for adequate education.

Accepting this view of the unitary organization of materials, it appears obvious that both fusion and subject courses can be arranged in units, equally relational and equally natural. The difference in the units of the two kinds of courses lies in the point of view or the central core of thought adopted, not in the actual construction of the unit itself. Subject units center about a generalization drawn from subject scholarship; fusion units center about *present* forces, problems, or institutions.

Units organized on these two bases are to be compared and evaluated on the bases of (1) learnability, (2) facility for inter-unitary correlation, and (3) penetration, or significance, or usefulness. It seems, in theory, that fusion units or subject units are, or may be made, equally learnable. As to correlation among units, it seems that subject and fusion units may provide for synthesis of materials *within* units equally well, since subject boundaries are not rigid. In correlation *between* units of a given course, subject units probably have the advantage, inasmuch as they maintain a consistent point of view throughout a course. In regard to the third criterion, that of significance, it seems

probable that subject generalizations may be more penetrating than fusion learnings, because the former are the products of cumulative, specialized scholarship and are not limited in time or scope.

It follows, then, that the fusion theory does not offer a superior organization of subject matter; in some respects, it is inferior to the subject theory.

Conclusion. Drawing together the lines of rational analysis pursued in the investigation, these attitudes toward the fusion controversy seem logical.

1. The theory on which subject teaching is based seems to offer greater educational possibilities than does the fusion theory, although its superiority lies in historical development rather than logic, and although the differences between the two theories are not sufficient to rule either out of consideration.

2. There is no guarantee, however, in either the subject theory or the fusion theory that actual courses constructed in the light of either theory will thereby be superior. Theory, not practice, has been under examination here.

3. However, since the practical considerations of teacher-preparation and general curriculum scheduling are favorable to subject arrangement, it is probable that subject courses may more nearly approximate their potentialities.

4. The fusion idea, however, is highly serviceable to social-science teachers, not as a panacea, but because it emphasizes educational concepts frequently forgotten; it is useful also as an occasional variant from subject practice. Fusion is a balance against undue conservatism and a prod to action.

At no time since the social studies have been taught in the secondary schools of the United States has their importance in achieving the objectives of general education in a democracy been as widely recognized, and at no time has the curriculum in the field been so uncertain and disordered, so little sure of itself, as during the decade just past. The older sanctions and standards for the teaching of academic social-science subject matter seem inadequate before the demands of current educational theory and the necessities of current educational practice.

V

WILCOX, LILLIAN A. "Fusion Courses in the Social Studies." (Doctor's Dissertation, Cornell University, 1931)

Purpose. This thesis presents summaries obtained by an analysis of six state and twenty city fusion courses of study in the social studies. These 26 courses were all the fusion courses, prepared by state and city departments of education, that were available in 48 states and 109 cities in February, 1931.

In this study geography, history, and allied subjects such as civics and citizenship are considered social studies, or social subjects. A course in which geography, history, and these allied subjects are taught as a composite course eliminating the boundaries separating the subjects and eliminating independent periods of instruction is considered a 'fusion' course.

Method. A guide was formed and the twenty-six courses were analyzed by means of this guide.

Conclusions. 1. The analysis of the courses revealed that a number of the courses officially designated as fusion courses did not really approximate the concept of a fusion course. The twenty-six courses fall naturally into four very general classifications: parallel, correlation, alternation, unification or fusion.

2. The concepts underlying the construction of fusion courses are still in a formative state.

3. There is evidence of a core content for the primary grades in the fusion courses that have been prepared by the state departments of education.

4. There is little evidence of agreement relative to the subject-matter content of fusion courses in grades above the primary grades. This may be due to the wide range of materials from which to select the content of such a course.

5. The adequacy of the treatment that geography receives as a part of a fusion course, in comparison with the treatment of geography in a separate course, seems doubtful if the heterogeneous assortment of topics and their diverse grade placement are used as criteria.

6. The value of activities, visual aids, and bibliographies in the social studies as a stimulus to the learning-teaching process is being recognized if the frequency of their occurrence in these courses is used as a criterion.

7. Provisions for groups deviating from the average are not being adequately supplied in the courses examined.

8. Recommendations for the use of objective tests occur infrequently. This is not surprising if the standardized objective tests are considered, because even though excellent, they may not be suited to local conditions. However, informal objective tests prepared by the teacher eliminate that objection and provide a useful aid in testing the results of teaching.

VI

PRALL, CHARLES EDWARD. "The Construction of Tests to Determine Whether the Major Objectives of Fourth-Grade Geography Have Been Attained." (Master's thesis, University of Chicago, 1926)

Problem. The preparation of a series of tests to measure the attainment of the major objectives in fourth-grade geography is a pioneer undertaking. Moreover, there are no tests in geography that have been designed to measure the special objectives of a given year's work. The current geography tests have been prepared to measure the outcomes of the final study of continents or countries, and for the most part are designed solely for the last two years of geography. They assume only one level for these two years.

The problem was to construct tests that would determine whether the major objectives of fourth-grade geography had been attained.

The *major objectives* of geography for one fourth grade were determined. The fact that in a slightly more general form they are common to a great many

initial courses in geography was also established. These major objectives of fourth-grade geography are (1) the development of a functioning understanding of the simple direct relationships between the food, clothing, shelter, work, and play of selected regions and their natural environments; (2) the building up of a world concept or framework into which the pupil will fit all his later geographical studies—an understanding of the significance of distance from the equator; (3) the development of the ability to interpret maps—the ability to secure information regarding human activities from maps; and (4) the development of an interest in the study of geography.

Examples of tests: 1. Test examining the ability to understand the significance of distance from the equator.

a. There is an island in the northern hemisphere on which there are some important iron mines. In December in that land, there is a long night, when for several days there is no daylight. This time of darkness interferes with some of the mining work. On the other hand, in June, there is a long day, when for several days there is no darkness. At that time of year daylight work can be done for twenty-four hours each day. This island is: () near the equator; () far from the equator; () about halfway between the equator and the north pole.

b. Pedro is a shepherd boy who lives near the southern end of South America. He lives: () in the northern hemisphere; () in the southern hemisphere.

c. In order to see the sun at noon he has to look () directly overhead; () to a place in the northern sky; () to a place in the southern sky.

2. Test examining the ability to interpret maps, the ability to secure information regarding human activities from maps.

In going by boat from A to B one would go: () upstream; () downstream. It would be () easier () harder for men to go from A to B than from B to A.

3. Test examining the ability to understand the simple direct relationships between food, clothing, shelter, work and play of selected regions and their natural environment.

This test is to see if you understand why the men of the hot, wet African Congo work and live as they do.

List I gives some of the things you would see them doing if you were to take a trip through the Congo. The first is building sloping, thatched roofed houses. Think why the Congo men build sloping, thatched roofed house. Then read List II until you find the group of words that explains why the men build houses of this sort. Be sure you find the best explanation. Put the number of this group of words after the word houses in List I. Then work on the next one.

List I

Building sloping, thatched roofed houses:
Wearing few clothes:
Carrying loads on head or shoulders:
Gathering bananas and cocoanuts:
Building dugout canoes:
Smoking meat or fish:
Growing corn and manioc:

List II

1. Hot, rainy climate—dense growth of trees and vines—land travel difficult.
2. Sun almost overhead at noon—always summer.
3. Wet seasons—heavy rain every day.
4. Hot, wet climate—trees grow without planting—tree crops good for food.
5. Hot, wet climate—planted in cleared places in forest—used as food.
6. Hot, wet climate—unhealthful—no animals for transportation like the camel or horse.
7. Hot, wet climate—many insects and flies—food spoils quickly.

At the outset it was apparent that it would be necessary to obtain some evidence to the effect that the tests, when completed, had measured the objectives for which they were planned. Other test-makers in the field of geography have failed to establish the validity of their tests on this point. To guard against this, it was decided to compare the attainment of fourth-grade pupils in one city in each test with the attainment of fifth-grade pupils in two other cities. The tests were also given to two sections of the tenth grade in a high school. Finally the tests were given to a large group of fourth-grade pupils in the two other cities in which the fifth-grade test groups were given.

Conclusions. Prall concludes that it is possible to prepare tests based upon the attainment of the major objectives of fourth-grade geography and to determine the validity of such tests by objective methods. Some of the tests had high validity; others needed to be slightly modified.

The tests have a large value (1) in improving the quality of instruction by showing teachers who have been working for these objectives just where their teaching has been ineffective, and (2) in showing the attainment or lack of attainment of these objectives on the part of pupils who have been following courses of study for which the objectives are vague and indefinite.

Some of the relations involved in building a world framework can be obtained by geography study that is not organized to develop these relations, except as they may be taught incidentally. Other relations cannot be attained except by direct teaching. Direct teaching is needed to develop the ability to make simple interpretations of human activities from maps. The measurement of the attainment of the first objective is more difficult than the other three.

VII

LORD, F. E. "The Ability to Make Geographical Uses of the Ideas of Longitude and Latitude." (Master's thesis, University of Chicago, 1928)

Problem. This study was made for the purpose of determining the ability of seventh-grade children to make geographical use of the ideas of longitude and latitude; i.e., use in helping to explain a human adjustment to natural environment; in other words, explaining an activity of man in so far as it is related to the longitude and latitude of the place or region in which it is performed.

The problem as related to longitude is delimited to one phase of interpretation; namely, the interpretation of activities that involves an understanding of the relation between longitude and time.

Four phases of geographical uses of latitude were considered according as the interpretation of activities involved an understanding of the relation between (1) latitude and seasons (summer and winter), (2) latitude and length of day, (3) latitude and length of growing season, and (4) latitude and the position of the noon sun.

The following abilities were tested: (1) ability to define latitude and longitude, (2) ability to recognize and use parallels and meridians, (3) ability to read longitude and latitude of places, (4) ability to find places when their longitude and latitude are given, (5) ability to use longitude and latitude to match regions, (6) ability to interpret activities that involve an understanding of the relation between longitude and time, and (7) ability to interpret activities that involve an understanding of the relation between latitude and (a) seasons, (b) length of growing season, (c) length of day, and (d) position of the noon sun.

The children selected for the study were seventh-grade pupils who had completed or nearly completed their systematic study of elementary-school geography.

Technique Employed. A survey test was given to determine the understanding which the children had of latitude and longitude.

Children were retested orally on responses to determine whether the written responses were in keeping with their information on the point under consideration.

Knowledge of the relations with longitude was tested by exercises that involved the explanation of differences or similarities in human activities, which were to be explained in terms of differences or similarities in the time and longitude of the places referred to in the exercises (hypothetical points indicated on a Mercator projection map of the eastern—and thus less familiar—hemisphere).

The second series of tests was designed to deal with the uses of latitude. In each exercise sentences were given that either stated or suggested human adjustment to natural environment and the children responded by underlining the one of the four latitudes named at the end of the exercise that could be

the latitude of the hypothetical place where the adjustment was made. No map was used.

The complete series of tests, with the exception of one test, were given to four seventh-grade classes in four different school systems.

Results. The children were relatively accurate in making geographical uses of the idea of latitude in interpreting activities which relate to (a) the summer season of places in the North Temperate Zone, (b) the winter season of places in the North Temperate Zone, (c) the winter season of places in the North Frigid Zone, (d) long growing seasons in regions of low latitude, and (e) short growing seasons in regions of high latitude.

There are conspicuous deficiencies in ability (1) to explain the relation between man's activities and position of noon sun in the sky, and (2) to explain activities involving conditions that are the reverse of those experienced by children who live in a northern region.

TABLE VI.—DISTRIBUTION OF CORRECT ANSWERS ON EXERCISES RELATING TO USES OF THE IDEA OF LATITUDE (after Lord)

Items Involved in Test Exercise			
Explanation of Activity Involving a Knowledge of Relation between Latitude and	Season Described in Exercise	Approximate Latitude (Zone)	Percent of Correct Answers
Time (month) of Seasons	Winter	North Frigid	77.33
	Winter	North Temp.	71.46
	Summer	North Temp.	51.53
	Summer	South Temp.	28.67
	.....	Torrid	27.94
	Winter	South Frigid	20.51
	Winter	South Temp.	16.32
Length of Days	Winter	North Frigid	57.61
	.....	Torrid	32.12
	W. & S.	North Temp.	29.30
	W. & S.	South Temp.	27.13
	Summer	South Frigid	22.28
Length of Growing Season		North Temp.	52.77
		South Temp.	52.21
		Torrid	41.20
		North Temp.	39.09
		South Temp.	27.43
Position of Noon Sun		South Temp.	35.33
		North Temp.	32.15
		North Temp.	27.55
		South Temp.	26.45
		Torrid	21.82
		North Temp.	21.74
		South Temp.	19.50

It also seems clear that children are influenced much more strongly by concrete, actual experiences relating somewhat to the idea of latitude than they are by experiences (of whatever type they may be) that have been met in formal geographical study. This conclusion is based, in part, on the consideration that the children tested have lived in places where June, for example, is a summer month and December, for example, a winter month, and where "to go north any considerable distance" means in general going to a cooler region, while "to go south any considerable distance" means in general going to a warmer region. These ideas are the ones to which many of the high scores are related. Obviously, as is indicated by the comparatively low scores made on most exercises expressing association of ideas other than those of the "cooler-north" and "warmer-south" group, the children tend to apply to all other parts of the world these ideas gained from actual experience. Furthermore, any experiences which they may have had that tend to overcome the results of such generalization from insufficient data on their part have been mostly ineffective.

This investigation points clearly to the need for providing in the early stages of elementary geography for the study of typical regions throughout the world selected specifically to build a working concept of the world as a whole. Such a study should provide a background of experiences which are essential to a functioning notion of these terms as they are introduced at later stages.

VIII

HOPPES, GLADYS JORS. "Ability of Pupils to Read Pictures for Geographic Purposes." (Master's thesis, University of Chicago, 1930)

Landscape reading is a basic part of the study of geography. The survey of actual landscapes has afforded much of geographic knowledge that has been accumulated. Landscape study is also essential in the further accumulation of such knowledge. Furthermore, in gaining possession of the knowledge that already has been organized into the science of geography, concepts of many kinds are needed. These concepts can be gained effectively only through observation of landscape features. Finally, landscape reading is involved in the application of geographic knowledge to the solution of practical current problems. Landscape interpretation also contributes to many everyday matters, such as choice of a place in which to build a home, selection of a site for a factory, enjoyment of travel and pleasure, etc. Since the observation of actual landscapes is limited in the case of most pupils to the home region, observation of other parts of the world becomes possible through pictures. The ability on the part of the pupils to use pictures effectively is one of the outcomes sought in the teaching of modern geography.

Purpose. The purpose of this study is to find out to what degree pupils of the elementary-school and junior-high-school grades have gained ability to read pictures of the landscape. 'Reading' a picture for modern geographical purposes means reading it for information that helps the reader to see clearly relations between human activities and the kinds of places in which they are carried on.

The specific problems for study were: (1) What ability, as shown by reactions to specific tests, do pupils have to identify or recognize in pictures significant cultural features? (2) What ability do pupils have to identify or recognize in pictures significant natural features? (3) What ability do pupils have to recognize geographic relations shown or suggested by pictures? (4) What ability do pupils have to associate crops shown in the pictures with specific regions? (5) In what phase of picture-reading ability, if any, do pupils seem to be deficient? (6) What are the differences in picture-reading ability of pupils in grades four to nine inclusive? (7) What are the differences in picture-reading ability among pupils in rural schools, pupils in village schools, and pupils in city schools?

Since none was available, a test had to be constructed. Pictures were used from educational charts published by the U. S. Department of Agriculture, showing crops and farm practices.

A list was then made of the phases of ability that the test items were designed to test. These were (1) recognition of selected cultural items, (2) recognition of selected natural environmental factors shown or suggested by the pictures, (3) recognition of relations between natural and cultural items shown or suggested by the pictures, and (4) association of crops and related natural conditions with specific regions.

The first two phases of ability, recognition of cultural and of natural items, were included for diagnostic purposes, since it was essential to find first whether this raw material for geographic thinking could be read by the pupils. The third phase, that dealing with relationships between cultural and natural features, was the critical part of the test. The fourth phase is always an outcome of sound geographic work; since it may result merely from memorizing, it is not so helpful an index of the geographic training of pupils as is the third phase.

The multiple-choice type of test was used throughout.

The tests were given to 466 pupils in Grades IV to VIII in village schools, to 61 seventh-grade pupils in rural schools, and to 668 pupils in Grades IV to IX of the Milwaukee schools.

Conclusions. 1. More than 80 percent of the cultural items were correctly identified by the pupils in the sixth, seventh, eighth, and ninth grades. The fourth-grade and fifth-grade pupils identified correctly more than 65 percent of them.

2. More than 80 percent of the natural items were correctly identified by the pupils of the seventh, eighth, and ninth grades, 63 percent by the fourth grade, 70 percent by the fifth, and 75 percent by the sixth grade.

3. The percentage scores on ability to recognize crop relations are lower than the scores on other types of ability—eighth grade only 50 percent; fourth and fifth grades 36 and 37 percent. On the assumption that a score of 33 percent could be made by sheer guessing, these latter two were little if any more than a guess.

4. Percentage scores on recognition of crops of specific regions are lower than recognition of cultural and natural items; they range from 39 in the fourth grade to 65 in the ninth grade.

5. Increments of improvement are fairly uniform.

6. Living in an agricultural environment seems to have affected little, if any, the ability of pupils to read pictures showing agricultural landscapes.

7. Since the most essential phase of the ability to read pictures for geographical purposes is the ability to recognize relations between cultural and natural items shown or suggested by the pictures, the test data give evidence of little picture-reading ability on the part of the pupils tested, particularly in the fourth, fifth, and sixth grades.

IX

MANDEVILLE, A. DOROTHY. "Children's Interest in Two Types of Reading Material Used in Geography." (Master's thesis, University of Chicago, 1930)

Purpose. In the study of geography, reading is an important aid in gaining understandings of how man's work and play are related to his natural environment. Interest is a significant factor in guiding children in reading. Much of the material prepared for children has been confined largely to mere descriptions of ways in which people live, with little or no explanation of these ways. The purpose of this study was to collect and interpret objective data concerning the comparative interest which children display in (1) readings that merely describe human activities and (2) readings that not only describe such activities but also give some explanations of them.

Method. Twenty pairs of readings were prepared, each pair consisting of two brief paragraphs. Ten pairs were on Nigeria and ten on Denmark. For example:

Story A

The natives live in villages, in each of which you find from twenty to thirty huts. These huts have mud walls and are thatched with palm leaves. The roofs are very sloping. Their shape might make you think of an ice-cream cone.

Story B

The natives live in villages, in each of which you would find from twenty to thirty huts. These huts have mud walls and are thatched with palm leaves. The roofs are very sloping. Their shape might make you think of an ice cream cone. There are many oil palms in this land, and palm leaves which can be used for thatch are abundant. A sloping roof sheds rain rapidly, and there is much rain here.

Questions were then devised to discover which of each pair of stories was preferred, and why. The readings and the questions were given to 2340 children in Grades IV to IX.

Results. The experiment showed (1) that 83.8 percent of all reactions were in favor of the readings presenting relations; (2) that there was slight

difference in the reactions of pupils of one school compared with pupils in other schools; (3) that in cases where intelligence tests had been given for the grouping of pupils, there seemed to be almost no correlation between intelligence quotients and choices of readings; (4) that a seeming positive correlation between grade level and preference for relation readings in Grades IV through VIII was offset by a negative correlation between these items in the upper grades; (5) that 60.8 percent of the children who checked reason for liking the relations readings better were conscious of the fact that it was the explanatory element in these readings that appealed to them, because they checked the reason 'It tells why'; (6) that 29.8 percent of the pupils who chose the fact reading expressed an aversion to the explanatory element contained in the relations material; and (7) that little more light as to why the pupils reacted as they did was secured from an analysis of the voluntary reasons.

There were indications based on subjective analysis of the contents of paragraphs for which liking or dislike was objectively determined that stories containing relations that were specific, direct, concrete, not too numerous, of a novel aspect, and of fundamental importance in the lives of the people were most popular. This conclusion was not established by the study, however, and the problem why some types of relations readings are more popular than others needs further investigation.

Comment. Few investigations have been made to measure interest. In geography there are four: (1) the investigation by Young (82) of children's interest in things seen when traveling; (2) that by Gibbs (22) concerning children's interest in different topics studied in geography, such as plants, animals, etc.; (3) that by Ridgley (60) of children's interest in learning about places; and (4) that here described, by Mandeville (38), of children's interest in two kinds of reading material in geography.

X

DAVIS, HARRIET FARR. "The Relation of the Text to the Pictures in Two Types of Elementary Geographies." (Master's thesis, University of Pittsburgh, 1930)

The purpose of the study is to inquire into some existing techniques in the uses of pictures in geography texts in order to determine: (1) the organization of each text in relation to the pictures, (2) the purposes for which pictures are used, (3) the supplementary information given in relation to the pictures, and (4) the techniques developed for interpreting and using the pictures.

To do this, answers to the following questions were sought: (1) How many pictures are used? (2) What is the average size of the pictures and the space of illustration per page? (3) What is the arrangement of pictures on the page? (4) What are the types of pictures used? (5) What is the plan and organization of each text in relation to the pictures? (6) How is the distribution of pictures and references to pictures apportioned to the

content? (7) For what purposes are pictures used? (8) What supplementary information in relation to pictures is supplied? (9) What techniques are developed for the reading, interpretation, and use of pictures in geographic study?

The study applies these questions in an examination of two typical texts. The results are too detailed to permit ready summarizing here.

VIII. CONCLUSIONS

Investigation in the teaching of geography began about 1900 and in the thirty odd years there were about 80 studies made, but less than half of these (35) are published. The others are in the form of masters' and doctors' theses and are relatively inaccessible to teachers. Compared with the amount of research done in reading and arithmetic, the field of geography has hardly been touched. Not only has there been little work done, but at least one-fifth of the studies have been based upon subjective data. Most of the objective data pertain to references to names or the amount of space given to various topics. While such investigations may throw light upon the relative value of subject matter, they do not tell us what geography is really being taught. What we need most are studies that focus attention upon ideas.

The scope of the research has included many divisions of the field of geography teaching, but has been especially concerned with curriculum construction and with the status and history of geography and methods.

The value of the investigations has naturally varied greatly, because of variation in the validity of the conclusions reached, and because of differences in the relative significance of those findings that have been adequately supported.

The work has led to the following developments: (1) the introduction of new-type tests and of tests examining not only for facts, but also for understandings and for map and picture-reading abilities and attitudes; (2) consideration of vocabulary difficulties that face both author and teacher; (3) the acknowledgment of the need for specific directions for study; (4) consideration of the type of study questions and pictures contained in textbooks and of the use made of these questions and pictures; (5) realization of the need for the better preparation of geography teachers; (6) realization of the need for the statement of the objectives of geography in more specific form; and (7) realization of the need for the determination of minimal essentials of some kind.

The need for scientific studies in the teaching of geography is great, especially for studies employing experimental methods. Some much needed investigations are: the determination of minimal essentials in terms of geographic understandings; the grade placement of subject matter as conditioned by the difficulty of the geographic understandings presented; analysis of difficulties; analysis of children's errors, of children's interests; tests on the reading of graphs and statistics; additional tests on map-reading and picture-reading abilities; investigations in the fields of method, of supervision, and the training of geography teachers; and the development of materials making known contributions to geographic understanding.

EDITOR'S PREFATORY NOTE TO CHAPTERS XXIX TO XXXII

The invitation extended by the Society's Yearbook Committee on Geography to those interested in the teaching of geography to submit for possible publication in this Yearbook reports, studies, and investigations pertinent to its general theme met with such favorable response that the Committee found itself confronted with the proverbial 'embarrassment of riches.' Eventually the Committee selected from the material thus contributed thirty-two studies, and these studies were transmitted to the editor with instructions to make his own selection from among them up to the limit of available space. Since there was not space for much more than half of the material, the editor selected the studies that follow by first discarding those submitted by persons not active members of the Society (in accord with an established rule of the Board of Directors) and then discarding those that for one reason or another seemed less likely to be of interest and value to the readers of the yearbooks. The editor takes the responsibility for the results of the process of selection thus thrust upon him, which he trusts will in the main be justified when the yearbook is put to use.

It seems fitting that there should be acknowledged here the contributors and the contributions that had to be excluded for the reasons just mentioned. Here is the list:

- William Berry. "A Program for the Improvement of Instruction in Introductory College Classes."
Harriet Carter. "An Experiment in Broadcasting Geography Lessons."
Lenox Chase. "Specific Equipment for Geography Instruction in a Small High School."
Ivan C. Diehl. "The Use of the Textbook in Teaching Geography."
A. G. Eldridge, *et al.* "Preliminary Steps in Teaching Children to Read Maps." (An extension of Chap. XXV by the same authors.)
Ruth Geiger. "Survey of Fifty Current Courses of Study."
Ruby Harris. "Urban Geography in the Sixth Grade."
E. E. Lackey. "A Statistical Study of the Correlation of Geography and History in the High School."
E. E. Lackey and T. V. Goodrich. "Relation of Facility in Reading Maps to the Quantity and Complexity of Detail."
J. Louise Moran. "Comprehending Technical Terms in Geography Teaching in the Fourth Grade."
A. L. Pugh. "The Commercial Museum in the High School of Commerce of New York City."
A. L. Pugh. "The Equipment for Teaching Physical Geography in the Large High School."
H. Harrison Russell. "A Suggested Equipment for the Geography Department of a Teachers College."
Tracy Tyler. "What Can Radio Do for Geography?"

The eighteen contributions for which space has been found in this yearbook have been grouped into four chapters, by assembling as Chapter XXIX, six studies of abilities and disabilities; as Chapter XXX, five studies of instruction; as Chapter XXXI, five studies of status; and placing in Chapter XXXII two miscellaneous studies.

G. M. W.

CHAPTER XXIX

MINOR CONTRIBUTIONS: SIX STUDIES OF ABILITIES, DISABILITIES, AND DIFFICULTIES IN GEOGRAPHY

I

DIFFICULTIES IN USING GEOGRAPHY TEXTS¹

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I. PURPOSE OF THE STUDY

In the elementary grades in the United States a knowledge of geography is acquired chiefly through the study of a text. This is almost inevitable at the present time because the teachers directing the study are usually insufficiently prepared to teach without a text. That actual results of attempts at making children aware of geographic problems and at developing skills often fall far short of expectations is the experience of many teachers. It is logical to seek in learning difficulties that are experienced in the use of the text the chief explanation of these discrepancies between attempts and results.

To discover what some of the learning difficulties are was the task we set ourselves. Using five recent and widely used beginning texts as a basis, we worked out a list of what, through our experience as teachers of geography, we thought might be probable difficulties. This list was sent to a number of rural and grade teachers and supervisors who were asked to check those of the difficulties that they had encountered frequently in the books they were using.

II. A CHECK LIST OF DIFFICULTIES

The list of probable difficulties follows:

1. Difficulties due to lack of objectives (for texts as a whole or for individual units)
 - a. Text does not state objectives
 - b. Objectives are not clearly defined in the text
 - c. Text requires little use by the children of the objectives stated

¹The assistance is acknowledged of Florence Eddy and F. E. Lord in the preparation of this report submitted by Miss Wilson.—A. E. P.

2. Difficulties due to unsuitable objectives
 - a. Objectives are not related to the interests of children
 - b. Objectives are stated on an adult level
 - c. Objectives are not geographic
 - d. Major objectives are not sufficiently emphasized
 - e. Minor objectives are given too much emphasis
3. Difficulties due to the nature of the context
 - a. Text and references cited are inadequate for the realization of the objectives
 - b. Text lacks wealth of interesting detail
 - c. Material is not geographic
 - d. Vocabulary is not adapted to ordinary child
 - e. Geographic principles developed are little suited to the ability and needs of children
 - (1) Principles are too technical
 - (2) Principles are on the adult level
 - f. Desirable relationships inherent in the material are not developed
 - g. The style is not clear
 - h. The material is not organized
 - i. The material has little correlation with other subjects
 - j. Text emphasizes the unusual in the life of a country
4. Difficulties due to lack of provision for developing skills
 - a. No adequate guide or help is given in constructing and interpreting graphs
 - b. No adequate guide or help is given in making and interpreting maps
 - c. No adequate guide or help is given in interpreting pictures
 - d. No adequate guide or help is given in problem-solving
 - (1) In formulating and analyzing problems
 - (2) In collecting data from maps, pictures, descriptions, specimens, et cetera
 - (3) In organizing data
 - (4) In verifying data and drawing conclusions
 - (5) In using conclusions in additional problems
 - (6) In organizing and presenting reports
 - e. No adequate guide or help is given in using study helps
 - (1) In using cross references
 - (2) In using the table of contents
 - (3) In using the index
 - (4) In using key-paragraph topics and captions
5. Difficulties due to the nature of illustrative material (Pictures)
 - a. Pictures have insufficient geographical content
 - b. Pictures have little connection with the relationships developed in the context.
 - c. Pictures are not used in the context

- d. Pictures fail to challenge interest
- e. Pictures are related to adult interests
- f. Pictures stress unusual rather than fundamental concepts
(Maps)
- g. Maps are too detailed
- h. Context requires little interpretation of maps
- i. Single maps are used for too many purposes
- j. Maps are too generalized to be accurate
- k. Maps are not carefully graded in difficulty
- l. Guides are not given for interpreting new map symbols when presented
(Graphs)
- m. Graphs are too complex
- n. Little use is made of graphs in context
- o. Graphs lead to wrong conclusions
- 6. Difficulties due to the lack of provision for fixing essentials
 - a. No summarizing exercises are required
 - b. No check problems are provided
 - c. No use is made of ideas when once developed
- 7. Difficulties due to lack of opportunities for self-expression on the part of the children
 - a. The collection of additional information bearing on the problem being investigated is not encouraged
 - b. Little impetus is given to find and to evaluate new references
 - c. Little chance is given to suggest additional problems
 - d. Little opportunity is afforded for suggesting additional activities for solving problems
 - e. Few suggestions are given to promote the collection of current information bearing on the problem
 - f. Few suggestions are given to supply additional illustrative material
- 8. Difficulties due to individual differences in children
 - a. Texts make inadequate provision for supplementary material
 - b. Few suggestions are given for reading different types of material
 - c. Few provisions are made for planning and carrying out additional activities (problems, puzzles, games, maps, note books, weather charts, excursions, et cetera)
 - d. Text makes little provision for extra-curricular activities
 - e. Text is of too limited range of ability.
- 9. Difficulties due to way of using the text
 - a. Text suggests no plan
 - b. Purpose of the text is not given
 - c. Plan suggested by the book is not suited to the abilities of the children
 - d. Plan does not foster initiative and independence on the part of the children and teachers
 - e. Text lacks teaching helps
- 10. Difficulties due to hygienic and other features of the book
 - a. Type is not suitable

- b. Pictures and maps are over-colored
- c. Pictures and maps are blurred
- d. Binding does not wear well
- e. Illustrative materials are too far removed from the context to which they apply
- f. Length of reading line is not suitable
- g. Type of paper is responsible for eye strain

III. GENERAL RESULTS

This study ought to be carried out on larger number of teachers with some provision for ensuring carefully considered responses. In its present form it may serve a useful purpose by having outlined the criteria for judging a geography textbook.

From our own application of it we find teachers checking items that indicate the following conclusions:

1. Most of the texts have not brought out their objectives clearly enough for the children to recognize them as objectives, nor have these texts required much use by the children of the objectives implied.

2. Topical headings and captions are often used to serve as objectives, but they are usually followed by expositions or descriptions that relieve the children of all responsibility except that of memorizing.

3. The objectives in the texts are felt to be often on an adult level or not geographic or not sufficiently emphasized.

4. Desirable relationships inherent in the context are not brought out.

5. Principles too technical for children of the elementary school are developed in isolation, with the idea that children will use them later in concrete situations.

6. Too many unusual and technical terms are introduced with insufficient explanations.

7. Difficulties due to lack of provision for developing skills were cited most frequently for all of the texts. There are no standards for selecting skills or for grading them in difficulty. Texts would present fewer difficulties to children were there some agreement as to what skills and how many of them should be taught in each grade.

8. Many of the difficulties reported are obviously due to lack of preparation on the part of the teacher and not to the nature of the text. Texts are constantly improving. This investigation shows, however, that many texts fail to present material in such a way that

geographic relations are emphasized; they fail to help pupils realize geographic objectives; and they fail to stimulate pupils to active coöperation in working out the problems they must solve before attaining these objectives.

II

A CLASSIFICATION OF COMMON ERRORS IN GEOGRAPHY MADE BY TEACHERS AND PUPILS

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I. PURPOSE

The purpose of this study is ultimately to reduce the number of pupil-made errors in geography. It is hoped that some progress may be achieved in this program (1) by calling attention to the existence of these errors, (2) by classifying the errors according to their underlying causes, and (3) by emphasizing the desirability and the possibility of removing the causes. The errors themselves are legion; the groups are comparatively few. It is usually easier to rout a regiment than to overcome guerillas.

II. METHOD OF OBTAINING DATA

The method of study has been as follows: The writer invited the superintendents and supervisors of several school systems to concentrate for a time on the problem of geography errors and to report them. Notable contributions were received from Rome, Gloversville, and supervisory district No. 3, Jefferson County, all of New York. Simultaneously the writer began to record such errors as they occurred in the practice school of Oswego State Normal and also the accumulated memories of errors from the past years of supervision and of teaching actual teachers in service.

The errors thus gathered from various sources were organized into groups. The classification was then submitted to fifty-two persons experienced in supervising geography classes and in training geography teachers, whose reactions are here summarized.

III. THE RESULTING CLASSIFICATION

The figures in parentheses indicate the number of coöperating geographers and superintendents who reported the common observation of each error. Undoubtedly a more extended research would reveal other common errors.

Group I

Errors traceable to vocabulary difficulties or lack of association of words with correct mental concept

A. When concrete visual images could be obtained by use of pictures, specimens, or available landscape features

1. Belief that the difference between a mountain and a hill is a matter of height (52)
2. Belief that a plain is practically as flat as a floor (50)
3. Inadequate concept of *valley*, *hill*, *gorge*, *peninsula*, *island*, and other land forms and corresponding water bodies (33)
4. Confusion of mountain *peak* with mountain *range* (30)
5. Belief that a *plateau* is practically as level as a *table top* (29)
6. Confusion of *glacier* with *avalanche* (19)
7. Confusion of *tundra* with *ice cap* (12)
8. Confusion of *iceberg* with *floe ice* (11)

B. When the concrete visual images could be obtained by use of models or demonstrations

1. Confusion of *mouth* and *source* of rivers (45)
2. Ignorance of *upstream* and *downstream* direction of rivers (41)
3. Confusion of *drainage basin* with *river system* (41)
4. Wrong idea of relations of sun's rays to earth, not realizing that the sun's rays are all parallel to each other and that the so-called slanting rays owe their name to the curve, or 'slant,' of the earth's surface (37)
5. Inability to visualize significance of *up* and *down* on the earth's surface (33)
6. Thinking that a branch of a river flows away from the main stream (*tributary* carries correct idea) (13)

C. When the words are quite abstract or not readily illustrated by visual aids

1. Very incomplete concept of climate, often thinking that it is synonymous with temperature alone or thinking that it can be adequately described by adjective 'good' or 'bad' (42)
2. Confusion of *product* with *resources*, *industry*, or *occupation* (38)
3. Vague notion of *ocean current*, but exaggerated idea of usefulness of ocean current as climatic factor (38)
4. Confusion of *cyclone* with *tornado* (32)
5. Lack of concept for *equinox* and *solstice* (27)

Group II

Errors due to lack of association of symbol with correct mental concept

1. Confusion of *north* with *up*, *south* with *down* (45)
2. Confusion of *country* with *continent* (38)
3. Inability to read either latitude or longitude, or to tell which is which (37)
4. Confusion of *state* with *country* (35)
5. Belief that Arctic and Antarctic circles are limits of belts of perpetual cold weather, instead of markers of 24-hour (or longer) continuous daylight or darkness (35)
6. Belief that the 'zones' are perceptibly divided by differences in climate (34)
7. Confusion of symbol with real thing: "this dot is St. Louis," rather than "this dot *represents* St. Louis," or "shows where it is" (34)
8. Belief that the tropics of Cancer and Capricorn are the limits of the belt of year-round hot weather, instead of the turning points of vertical ray (30)
9. Belief that land always slopes *up* toward the north, and that no river can flow northward (30)
10. Confusion of *parallel* with *latitude* (29)
11. Confusion of *meridian* with *longitude* (27)
12. Lack of distinction between symbols for political boundaries and streams (21)

Group III

Errors based on lack of skills and abilities

1. Inability to distinguish *head* or *foot* of a lake, *inlet* or *outlet* of a lake, source or mouth of a river (37)
2. Inability to trace river upstream or downstream (34)
3. Hunting for places on maps instead of memorizing location and pointing to the places promptly (34)
4. Inability to interpret distance north or south by means of changing number of degrees of latitude to approximate number of miles (32)
5. Inability to distinguish actual direction (cardinal and semi-cardinal points) in space (31)
6. Inability to interpret direction symbols on map or globe (29)
7. Inability to tell from map symbols in what part of a continent a country is located or in what part of a country a city is located (28)
8. Errors in estimating distances; thinking of the Arctic Circle as if it were close to the North Pole: "Alaska and other lands close to the Pole" (28)
9. Inability to tell from map symbols what direction one city or country is from another (27)

10. Confusing name of a city, or its first or last letter, with the dot which is the true symbol (25)
11. Inability to interpret map or globe scale (23)
12. Inability to refer to map key or legend for explanation (19)
13. Inability to interpret map or globe colors (18)

Group IV

Errors based on 'half truths' and misconceptions gathered from unconsidered remarks of the teachers and others

1. Thinking that it never rains in a desert (47)
2. Thinking that farther and farther south, the climate is warmer and warmer (39)
3. Considering Alaska (all of it) as the Far North, and believing that Alaska is so cold the year round that no life or vegetation exists: "bare cold stretches of ice and snow without life" (36)
4. Confusing a city with the surrounding rural area: *e.g.*, Rochester produces quantities of peaches (34)
5. Thinking that the boundaries of the torrid zone enclose all the hottest places; similarly, that the frigid zone contains all the coldest places (33)
6. Thinking that our hot weather is caused by nearness of the sun to the earth (30)
7. Thinking that the sun is overhead every noon at the equator (29)
8. Thinking that it is summertime in Florida when it is winter here (25)
9. Thinking that any phase of the moon except full moon is an eclipse (8)

Group V

Errors based on wrong ideas of cause and effect

1. The reason why it does not rain much in northern Africa is because there is a large desert in northern Africa (30)
2. The reason our Cotton Belt has a long growing season is because cotton needs seven months to mature (16)

All the errors attributed to children are also common among teachers. In fact, most pupil errors are in some way traceable to teacher errors; indeed, it seems probable that if teachers would eliminate them entirely, the errors would become less prevalent among children.

III

"TORRID, TEMPERATE, AND FRIGID ZONES"—SOURCES OF
ERROR IN CHILDREN'S THINKING

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I. PURPOSE

To anyone teaching beginning courses in geography to college classes it is evident that certain terms introduced in the elementary grades never created in the minds of the pupils the concepts intended. In some cases this is undoubtedly due to the fact that the terms were not well presented by the teacher because of lack of clearness in her own mind or because of lack of time. On the other hand, in some particular lines the misconceptions are so uniform and so widespread as to make it appear that the terms themselves must have something to do with the erroneous ideas that arise and are perpetuated.

Freshman college students enter geography classes with most peculiar notions concerning climatic conditions in the so-called torrid, temperate, and frigid zones and one must grant that many leave with their carefully-nursed, erroneous notions still in good condition. "But I have always thought that," seems to be considered a logical argument against a change.

So frequently were errors in thinking on the subject of zones encountered in our college classes that it seemed worthwhile to investigate the subject in the grades where geography is taught.

II. METHOD

To ascertain how common are misconceptions on the zones, an objective test was prepared and, through the courtesy and coöperation of many teachers, given to 1110 pupils mainly in the sixth, seventh, and eighth grades. The records obtained were from Iowa, Missouri, Montana, California, and Illinois; the largest number from Iowa. They represented various types of schools—rural, small town, and city.

III. THE TEST AND RESULTS OF ITS USE

The directions to the pupils read: "Check for each zone the statement which seems most clearly to tell the truth about the zone." The

test follows, with the percentages of checks made against each item by 1110 grade pupils and 860 college students.¹

1. *Torrid Zone*

	Percentages of Checks	
	Grade Pupils	College Students
1. The zone in which every place has the noonday sun directly overhead all year.....	15	23
2. The zone in which snow never falls anywhere.....	28	8
3. The zone in which the days are always longer than the nights	19	10
*4. The zone which includes all parts of the earth's surface where the sun is at any time directly overhead.....	19	27
5. The zone in which every place is always hot.....	30	27

2. *Temperate Zones*

1. The zones in which the weather is always temperate.....	15	9
2. The zones which are never so hot as the torrid zone and never so cold as the frigid.....	46	37
*3. The zones in which the sun appears daily and yet never mounts to a vertical position.....	21	20
4. The zones in which the weather is generally very mild; never very hot or very cold for long.....	21	26
5. The zones in which rain falls in moderate amounts in all seasons	5	2

3. *Frigid Zones*

1. The zones in which the land is covered with ice all year	14	19
*2. The zones which at some time of the year have twenty-four or more hours of continuous daylight.....	15	19
3. The zones throughout which there are six months of continuous day and six months of continuous night.....	25	21
4. The zones in which the temperatures are always cold.....	28	31
5. The zones in which no green vegetation grows anywhere	11	5

IV. COMMENTS ON THE RESULTS

An examination of the answers shows that the pupil's thinking on the zones is much influenced by the zone names, as one might expect. For example, the influence of the word 'torrid' is apparent when one notes that 344, or nearly one-third of the number, checked Item 5. In the same zone the next greatest number checked Item 2. Both these responses show that the idea of extreme heat is the one that prevails, despite the fact that an examination of five series of geographies in

¹The best statement, which should alone have been checked, is indicated by the asterisk in each group. The percentages do not always total 100 because some persons checked two items.

common use discloses pictures of snow-capped mountains close to the equator. In each text, too, pointed statements are made to the effect that the highlands of northern South America are cool and comfortable living places.

This error is not limited to grade pupils, for the same tests given throughout the past two years to beginning classes in college geography on the first day of the term show very similar results, as is set forth in the data already given, where it will be noted that only 238, or 27 percent, selected the correct description.

The term 'temperate' seems still more misleading, despite the fact that most of those answering live in the midst of its most intemperate section. Of the 1,110 grade pupils, 512 agree that this zone is never as hot as the torrid. In the college classes only 20 percent of the students recognized the temperate zones as functions of sun behavior while 37 percent considered that they were never so hot as the torrid zone and 26 percent considered them always very mild.

Answers on the frigid zone showed the effect of the oft-repeated tale of "six months of darkness" in Eskimo land as well as of the meaning inherent in the word 'frigid.' The same condition holds with college students, of whom one-fifth believe the six-months-of-darkness tale, while nearly one-third check "temperatures are always cold." This idea of year-around terrific cold everywhere within the Arctic Circle is one with which college students part most reluctantly.

Would it not be wise, in view of the wide-spread misconceptions which arise, to omit from fourth- and fifth-grade texts and courses of study all mention of zones? The terms are centuries old, but they have never served the needs of geographers accurately. Applied to small areas in the first place, they have become blanket appellations with no real significance. These misconceptions are a great hindrance to clear geographic thinking—how great only those who have struggled with the problem of 'unteaching' can realize.

When children have become accustomed to thinking in terms of the climatic characteristics of lowlands near the equator, of lands midway between the poles and the equator, etc., we shall be ready to introduce such terms as 'low latitudes,' 'middle latitudes,' and 'higher latitudes.' These terms carry in themselves no confusing implications. Until we introduce the subject of the position of the vertical ray of the sun with mathematical exactness, the zones and their exact boundaries serve us no particular purpose.

IV

A STUDY OF THE ABILITY OF ELEMENTARY-SCHOOL
PUPILS TO READ MAPS

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I. PURPOSE

In this study an attempt was made to discover whether elementary-school children are developing the necessary skills for the understanding of maps. It is recognized that there are varying types of maps in use by children, motorists, aviators, and mariners, with meanings peculiar to the specific map, yet withal there are common elements, such as the key, latitudinal and longitudinal lines, scale of miles, and title. The pupil who has received instruction in map fundamentals should be able to interpret those same fundamentals on any map.

The aim was (1) to measure the ability of children to use map symbols in the fourth, fifth, and sixth grades; (2) by means of a remedial program, to discover whether defects might in part be overcome by adequate teaching along specific lines.

With respect to the first aim, a similar study was made in New York City "to find out what the skills involved in map reading are, to measure them, and to suggest methods for improving them."¹ This study, however, concerned itself with eighth-grade pupils in an attempt "to measure the map-reading ability of children upon completion of the elementary-school course." Many children complete their elementary-school education at the end of the sixth grade and many finish their formal study of geography at the same period. For these reasons the present study included no grade beyond the sixth, since it was felt that pupils in the latter grade should have acquired skills necessary for the reading of maps in the geography texts.

II. METHOD OF OBTAINING DATA

Fifteen teachers in Grades IV, V, and VI coöperated in carrying on the study.²

¹ *Educational Measurements, No. 16* (November, 1930, Board of Education of the City of New York)

² Elizabeth Anderson, Mildred Barrows, Mary Beaulieu, Hazel Bemont, Elizabeth Brown, Edith Ericson, Anna Foberg, Anna Hurley, Foldine Jackson, Elsie Jones, Ellen Murnane, Gertrude Pierson, Hazel Prehm, Edna Saunders, and Helen Scheurer.

The initial step was the preparation of a set of questions involving the use of tools that elementary-school pupils must use in the interpretation of maps. The completion type of question was used.

The entire test was compiled from five diversified maps in *The Americas* by Atwood and Thomas. The test was first submitted to a representative fifth grade and from the results the questions were re-arranged in order of increasing difficulty. The test was divided into two parts, given on different days. (This accounts for the difference in the total number of pupils in the same grade in the results.)

*The Map Test*¹

Directions: Read the following questions carefully. Do not try to answer the questions from memory but use the map on the page given before each set of questions. All questions can be answered from the material on the maps. Write the answers on the lines under the questions. Do your best, but do not guess.

- A. *Use the map on pages 10-11 (Atwood-Thomas, The Americas, 1929).*
1. What does the green color indicate on this map?
 2. What do the rows of little arrows tell?
 3. What does the solid (darkest) brown color on the map mean?
 4. What type of region covers the most space on this map?
 5. How are the political boundaries shown?
 6. From what eastern city did the southernmost early trail across the Appalachian Mountains start?
 7. What is the latitude of Philadelphia?
 8. What state is in section K-5?
 9. What line of longitude passes through Cape Cod?
 10. About how many miles is it from Cleveland to Chicago?
 11. What is the complete title of this map?
 12. How many natural regions are there in the state of Colorado?
 13. To what country does Vancouver Island belong?
 14. The Pyrenees are in about the same latitude as what city in New England?
- B. *Use the map on page 196. You may use the map on pages 198-199 to find the names of the states (Atwood-Thomas, The Americas).*
1. How many people per square mile are shown by the black coloring?
 2. How many people per square mile are there in the largest part of the state of Nevada?
 3. What is the complete title of this map?
 4. In general, what is the number of people per square mile between the 95th and 105th meridians?

¹ Blanks for names, answers, etc., have been omitted.

- C. *Use the map on page 200.* You may use the map on pages 198-199 to find the names of the states.
1. How much rainfall does Iowa have?
 2. How much rainfall does Connecticut have?
 3. How much rain falls on the coast of Oregon?
 4. Name the state having the largest area with less than 10 inches of rain.
- D. *Use the map on pages 220-221.*
1. What do the red letters ASB near the city of Quebec mean?
 2. What is the name of the province for which the abbreviation B. C. stands?
 3. For what does the red line between Boston and Montreal stand?
 4. What area on this map is nearly covered by glacial ice?
 5. What is the capital of the Province of Saskatchewan?
 6. What does St. Johns, Newfoundland, export to the United States?
 7. For what do the small figures in circles in the Rocky Mountains stand?
 8. To what country does Greenland belong?
 9. What seaport is located in the Province of Quebec?
 10. What is the capital of the Dominion of Canada?
 11. In what direction is St. Johns, Newfoundland, from Godthaab, Greenland?
 12. In what direction is Iceland from Greenland?
 13. In what direction is Godthaab, Greenland, from Reykjavik, Iceland?
 14. In what direction is Seward, Alaska, from Cordova, Alaska?
 15. In what direction is Seward, Alaska, from Nome, Alaska?
- E. *Use the map on page 52.*
1. What does the red dot at Norfolk, Virginia, mean?
 2. What does the red triangle at Cleveland, Ohio, mean?
 3. How high above sea-level is Lake Erie?
 4. What is the name of the navigable river flowing into the Hudson River?
 5. For what is the region around Scranton, Pennsylvania, noted?
 6. What allows boats to go beyond the head of navigation on the Hudson River?
 7. What state has no lowland area?
 8. What is the largest city in section C-5?
 9. Name the city that is nearest 76 degrees West and 43 degrees North.
 10. What is the latitude and longitude of Washington, D. C.?

III. RESULTS

The accompanying table shows the number of pupils in Grades IV, V, and VI whose responses to these questions were right, wrong, or omitted.¹

¹ We regret to be obliged to limit Mr. Howe's table to specimen questions.—*Editor.*

Pages 10-11	Grade IV			Grade V			Grade VI		
	Right	Wrong	Omitted	Right	Wrong	Omitted	Right	Wrong	Omitted
1.	54	38	7	171	35	0	139	11	0
4.	22	61	16	91	108	7	90	55	5
7.	0	34	65	41	112	53	75	69	16
10.	6	52	31	33	138	35	44	76	30
14.	0	20	79	15	97	94	27	55	68
Page 196									
1.	39	30	30	126	52	28	130	18	2
2.	6	19	74	56	79	71	88	37	25
4.	3	31	65	31	107	68	46	60	44
Page 200									
1.	12	48	39	92	79	35	116	22	12
3.	11	38	50	74	86	46	100	31	19
4.	8	45	46	57	106	43	85	58	7
Pages 220-221									
1.	64	20	13	162	35	5	132	8	1
5.	3	46	48	35	100	67	76	54	11
10.	3	30	64	16	63	123	36	56	49
15.	0	40	57	11	140	51	9	120	12
Page 52									
2.	55	21	21	152	29	21	133	6	2
4.	12	27	58	72	65	65	90	38	13
7.	2	36	59	18	123	61	24	92	25
10.	0	24	73	1	70	131	11	96	34

IV. INTERPRETATIONS

Broadly speaking, the questions entail an ability (1) to read and apply symbols shown in the key or in the margin; (2) to understand the unwritten symbols, such as those representing latitude and longitude; (3) to tell direction accurately as indicated by parallels and meridians; (4) to estimate within reasonable limitations the mileage between points as disclosed by the scale of miles printed on the map; and (5) to read inscriptions on the face of the map, as in the example of height above sea-level.

However simple this may all appear to the adult mind, it is evident that most of the questions involve a multiplicity of skills, failure in any one of which may cause error. In Question 5 on map pp. 220-221, "What is the capital of the Province of Saskatchewan?" it is conceivable that 'Saskatchewan' may hold no meaning for the child; and although he is not limited to time, discouragement, after long search-

ing fails to reveal the whereabouts of the province, may cause him to omit the question.

In Question 4 on map pp. 10-11, the pupil must look first at the map and then at the key to answer: "What type of region covers the most space on this map?" He must judge the largest area, which in this particular instance is green, and must hunt in the key for the oblong that is labelled, "Lowlands and interior plains."

Question 7, pp. 10-11, "What is the latitude of Philadelphia?", may cause failure because the location of the city is unknown. Another cause for failure in a question of this type is because the pupil does not associate the dot locating the city with the name. This was brought out, not only in this test, but also on numerous other occasions.¹

Question 15 on map pp. 220-221 asks "In what direction is Seward, Alaska, from Nome, Alaska?" To those who have been taught that north is at the top of the map, the answer would be "south." But the meridians and parallels are curved and the correct solution, "south-east," calls for the knowledge that every meridian is a north-south line regardless of its curve and every parallel is an east-west line regardless of its curve.²

Question 10 on map pp. 10-11, "About how many miles is it from Cleveland to Chicago?", totals a surprising number of failures, despite the acceptance of answers within 50 miles of the correct mileage, 300. The question is raised as to whether this is due to inability to locate the cities or to inadequate and inaccurate use of the scale of miles.

The use of other miscellaneous skills may lead to confusion. In a special map where the states are not named, it may be necessary for the pupil to visualize their locations or else to transpose them from another map.

The low percentage of correct answers in the major portion of the test convinced the experimenters that children's concepts in map work are inexact and obscure. Space does not permit the inclusion of the

¹ The writer has also observed that on some maps the names of one or two of the largest cities are printed in type larger than the letters of the name of the state in which the cities are located. Pupils thus mistake the name of a city for that of the state.

² A. W. Abrams has analyzed a question of this type (Bulletin to the Schools, The University of the State of New York, Albany; "Observations on Answers to Question 14 of the June 1927 Regents Examination in Geography"). He found in a majority of cases a total disregard of the use of meridians and parallels and the reading of a map "as if north were in all cases directly toward the top."

remedial work that was carried on partly as the result of a so-called 'felt-need' by the pupils. Study sheets were provided for class study and the choice of map was restricted only so far as to exclude those in *The Americas*, because the original test was to be repeated as a criterion of gains made.

Results upon this second presentation of the test were gratifying. The number of correct answers shows material gain in practically every question. The outcome fosters a conviction that careful, exact teaching along definite lines will produce in the average child in the fifth and sixth grades the ability to interpret accurately any map's fund of information. Below these grades only the most simple skills can be developed.

V. SUMMARY AND RECOMMENDATIONS

In summing up the possibilities tending toward better teaching and learning techniques in the ability to read maps, the writer offers these recommendations:

1. Further study should be made to provide authors and cartographers with data upon which to build pedagogically sound maps. This present investigation and those noted herein have merely opened up the field, and other studies are needed of developing map skills in the elementary school to the point where correct map-reading will become a fixed habit. Depending upon this reading is the ability to interpret maps that involve skills with which this study was not concerned but which are recognized as exceedingly important.

2. Elementary-school teachers should be aroused to the significance of correct use of maps in commonplace child and adult experience. A reëducation of the teacher, herself, through reading and study, is needed for the purpose of correcting errors and weaknesses of old-time instruction and of laying a foundation for scientific, accurate teaching.

3. Courses of study should provide for the systematic development of map-reading techniques. They should contain information sufficient for the guidance of the teacher and should so simplify the course that essential problems may be approached in logical, leisurely fashion. A few things well learned, a few skills well mastered, are more valuable than content crammed into confused and immature minds.

4. A more careful development of map skills is needed in textbooks. The mere insertion of maps and their correlation with the text is not enough. A definite map vocabulary should accompany the text, to

assist both teacher and pupil in developing ability to use maps from the simple to the complex.

5. Better teaching techniques are needed. These will no doubt follow in the wake of the factors mentioned above.

V

THE ABILITY OF CHILDREN TO INTERPRET GRAPHS

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I. PURPOSE AND METHOD

This paper reports the results of an investigation of the ability of children to read graphs. It does not concern itself with the value of the use of graphs in the geography class or with the methods by which they may be taught or used.

The ability of children to read graphs was studied by means of a test consisting of five common types of graphs, a circle graph, a two-dimension diagram, a horizontal bar graph, a multiple-picture graph, and a line graph. The questions asked about each graph included questions involving (1) the reading of rank, as "What country produces the most wool?" (2) the use of the key, as "How many acres are there in an average farm in Indiana?", and (3) interpretation of the significance of the graph. Examples of the last type of question were those intended to check the interpretation of the symbols and meaning of the multiple-picture graph, which used the picture of a ship to represent 50,000,000 bushels of wheat exported. The questions were, "Does the graph tell you that Canada has more boats than the United States?", "Does the graph tell you which country raises the most wheat?", and "Does the graph tell you why Canada exports the most wheat?"

The test was given to pupils in the fourth, fifth, sixth, and seventh grades, a total of 355 children. Three classes representing groups of slow, average, and superior children were tested in each grade. The same test was given in all the grades in order to discover the adaptation of the type of graph to the grade as well as the ability of the children to read graphs. This resulted in certain problems of reading and arithmetic skills in the lower grades. Consequently, the test does not

show to what extent fourth-grade children could use graphs especially constructed for them.

II. SUMMARY AND ANALYSIS OF RESULTS

The general numerical results for all the questions combined are shown in the accompanying table for the entire group, the superior group, and the slow group of each of the four grades tested.

PERCENTAGES OF CORRECT RESPONSES TO QUESTIONS ON FIVE COMMON
TYPES OF GRAPHS

Grade	No. Pupils	Entire Grade	Superior Group	Slow Group
IV	89	29	37	17
V	92	55	67	45
VI	78	60	76	58
VII	96	75	84	66

Analysis of the results also shows several significant points concerning the adaptation of the type of graph to certain grade levels and the type of information that can be gained from the graphs most easily.

The questions involving the use of graphs to gain information concerning *rank* were the easiest for all grades to answer. They were answered most easily for the two-dimension diagram, the pictorial graph, and the circle graph. Nine of ten fourth-grade children understand the meaning of a two-dimension diagram sufficiently to answer the question, "Which is larger, an average farm in China or one in Indiana?" But pupils of all grades tested found it difficult to read rank from the line graph; only eight of ten pupils can do this in the seventh grade.

In order to discover whether the children could *interpret the keys*, they were asked to *read quantities* from the graphs. This involved arithmetic skills not yet gained by the fourth and fifth grades. Besides this factor, which made the results unsatisfactory, inaccuracy in arithmetical processes made it still more difficult to determine just how many pupils understood what should be done.

It is surprising to find that as many as seven of the 89 pupils in the fourth grade were able to read quantities from the circle graph, the two-dimension diagram, and the bar graph. None in this grade, however, could do this with the picture graph and the line graph. For the grades above the fourth the picture graph was the one most easily read back into figures, and the line graph gave the most difficulty.

III. CONCLUSIONS

From the results of this study the following conclusions may be reached:

1. Slow fourth-grade children understand little of the meaning of graphs.
2. Superior fourth-grade children understand the meaning of simple graphs and can read simple facts from them.
3. Above the fourth grade, children can read graphs of simple types if the graphs are adapted to their attainments in the tool subjects.
4. Picture graphs, two-dimension diagrams, and circle graphs are the easiest for pupils of all grades to read.
5. Line graphs are the most difficult for children at all levels tested.
6. With the proper instruction and explanation, children in the seventh grade can interpret all simple graphs.

VI

STUDIES OF THE ABILITY OF PUPILS IN GRADES FOUR TO EIGHT TO USE GEOGRAPHIC TOOLS

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I. PURPOSE

This investigation is presented in an effort to portray a fairly accurate picture of how well children are learning to use those tools necessary for effective geography study. Attention is focused upon the uses of tools that can be satisfactorily measured and evaluated.

Tests composed of a series of graded exercises were prepared. These were given without preliminary drills or suggestive helps to pupils in four types of school: rural-consolidated, village, small city, and large city. Of the 556 pupils tested, ranging in age from nine to fourteen, about fifty percent are in English-speaking homes. They are in Grades IV to VIII, inclusive, and work under varying conditions of curriculum assignment, time allotments, and materials.

In view of the tendency to regard instruction in tool usage the task of those grades just preceding the junior high school, it was deemed wise

also to demonstrate that most of the work can really be satisfactorily handled there. Accordingly, one sixth-grade group was used as an experimental division (labelled E in the tables). Over the six-week period prior to taking the tests, these particular pupils received intensive drill in the use of the tools. The results that follow indicate the wisdom of this aspect of the experiment, since they show clearly that mastery of these tools is within the capacity of an average sixth grade if guided by appropriate instruction.

The responses were scored as 'omitted,' 'satisfactory,' or 'unsatisfactory' (in the sense of exhibiting satisfactory or unsatisfactory ability to use the geographic tool demanded by the exercise). It is most essential that the reader bear in mind that these tests were not given to measure knowledge of subject matter, but only to determine how well pupils can handle geographic tools.

II. THE TESTS AND THE RESULTS

Each test, and its several exercises, is next outlined; the numerical results are presented; and an attempt is made to draw reasonable inferences.

1. Test One: Globe Study

Exercise 1

Object: To determine the knowledge of general globe factors.

Content: On a circle, carrying the data indicated below, give (a) names of the five parallel lines drawn; (b) location of the poles; (c) direction in which Eskimo, Negro, and Japanese live from our homeland; and (d) home life of a family at "B," a city located in the Arctic.

Results: In this and similar numerical summaries of the data secured by the application of the exercises, S means 'satisfactory ability' to use the geographic tool concerned; U means 'unsatisfactory ability' to use it; O means 'omitted,' no response made; E means 'experimental class.' All the performances are in percentages. Grades are indicated in Roman numerals, IV to VIII.

Percentages for Test I, Exercise 1

	IV	V	VI	VII	VIII	E-VI
S	71	67	80	88	91	96
U	28	26	19	8	9	4
O	1	7	1	4	0	0

Inference: Satisfactory understanding of these globe factors is shown. The lines, Tropic of Capricorn and Tropic of Cancer, are the most often confused. Regression in the fifth-grade responses may possibly be attributed

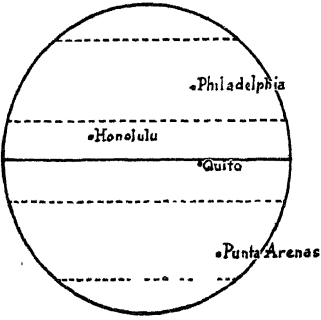
to the introduction to more technical geography, with the resulting neglect of material previously learned.

Exercise 2

Object: To determine understanding of latitude as a means of globe location.

Content: On a circle representing the globe: (a) number the five parallel lines drawn; (b) locate three regions at stated latitudes; (c) give the latitude of the four cities located. (See Fig. 1 for reproduction of this exercise.)

Test One - Exercise 2



(a) Write the correct number of degrees beside each of the five parallel lines shown on this globe.

(b) Print (1) a capital A at 30° North Lat
(2) a capital B at 80° North Lat
(3) a capital C at 45° South Lat

(c) Complete this table from the globe

City	Latitude
(1) Philadelphia	
(2) Honolulu	
(3) Quito	
(4) Punta Arenas	

Percentages for Test I, Exercise 2

	IV	V	VI	VII	VIII	E-VI
S	0	5	20	20	41	79
U	16	27	78	58	55	21
O	84	68	2	22	4	0

Exercise 3

Object: To determine understanding of longitude as a means of globe location.

Content: On a circle representing the globe: (a) name and number the line drawn through Greenwich; (b) number the other lines; (c) locate three regions at stated longitudes; (d) give longitude of the four cities located.

Percentages for Test I, Exercise 3

	IV	V	VI	VII	VIII	E-VI
S	1	7	18	14	28	79
U	14	26	69	52	53	21
O	85	67	13	34	19	0

Inference: The limited satisfactory responses indicate little or no acquaintance with the concepts of parallel and meridian. From these results, it seems wise to introduce the child to these useful tools early, and to continue short purposeful drills until he handles latitude and longitude with automatic facility. Sooner or later the notion penetrates and he has at his command one instrument to assist in the interpretation of climatic conditions and the life possible in a given area.

Exercise 4

Object: To determine ability to recognize continental masses and the larger bodies of water.

Content: On a sketch map of the world: (a) print names of continents; (b) print names of oceans.

Percentages for Test I, Exercise 4

	IV	V	VI	VII	VIII	E-VI
S	42	37	57	70	77	96
U	50	42	40	25	23	4
O	8	21	3	5	0	0

Inferences: In the fourth grade, where world geography is introduced, 50 percent were unsatisfactory. Confusion between Africa and South America, and the location of the Pacific Ocean were the outstanding difficulties. It is apparent there is great need for repeated use of cardboard outlines, profile maps, wall maps, and globes in order to leave permanent mental images of continental shapes, sizes, and locations.

2. Test Two: Map-Reading

Exercise 1

Object: To determine power to route a path in accurate scale measurement.

Content: In a rectangular block, sketch a simple path, using: (a) scale—1 inch to 1 mile; (b) directions—north, east, west.

Percentages for Test II, Exercise 1

	IV	V	VI	VII	VIII	E-VI
S	13	33	62	74	79	83
U	27	56	36	21	21	17
O	60	11	2	5	0	0

Inference: The results show an increasing ability in correct use of a scale, but this ability can be developed well in the sixth grade by proper drill.

Exercise 2

Object: To determine understanding and use of legend.

Content: A rectangle divided to represent three fields planted with cereals, had an appropriate legend. Pupils stated (a) cereal planted in each field, (b) how answer was determined.

Percentages for Test II, Exercise 2

	IV	V	VI	VII	VIII	E-VI
S	16	26	35	47	58	92
U	53	54	59	48	40	8
O	31	20	6	5	2	0

Inference: The difficulty lay not so much in the use of the legend, as in stating the term applied to the tool. (The acceptable answer was "legend," or "key.") The tendency of the business world to use graphic illustrations with accompanying legends makes it seem impossible to overemphasize the need for their ready interpretation.

Exercise 3

Object: To determine ability to find the required map and to use the legend with accuracy.

Content: From maps in textbook, determine (a) topography of a stated area, (b) annual rainfall of another region, and (c) density of population of a third region.

Percentages for Test II, Exercise 3

	IV	V	VI	VII	VIII	E-VI
S	0	25	30	45	62	71
U	0	29	36	40	34	12
O	100	46	34	15	4	17

Inference: Since fourth-grade textbooks do not give such maps, it was not expected that these pupils would respond. No doubt the difficulty for the remaining pupils lay both in the inability to locate the required maps and to read their legends. If maps open the mind to the meaning behind descriptive content, then the pupils must be encouraged to read and interpret them at every conceivable point.

Exercise 4

Object: To determine ability to use a scale.

Content: Using the scale, (a) measure the distance between two cities, and (b) determine the comparative length of two coastlines.

Percentages for Test II, Exercise 4

	IV	V	VI	VII	VIII	E-VI
S	0	11	12	34	53	63
U	0	46	33	40	34	25
O	100	43	55	26	13	12

Inference: The results indicate the scale to be one of the most neglected tools. Since a textbook provides maps of varying scales and projections, there is necessity for an adequate understanding of each accompanying scale. Only in this manner are great inaccuracies in making relative comparisons and other map interpretations avoided.

3. Test Three: Climatic Elements

Exercise 1

Object: To determine knowledge of wind-belt location.

Content: On the first of two circles was marked the wind belts for June. The problem asked that (a) wind belts be named on the first circle, and (b) wind belts for January be located and named on the second circle.

Percentages for Test III, Exercise 1

	IV	V	VI	VII	VIII	E-VI
S	0	2	6	7	19	67
U	0	8	16	33	55	29
O	100	90	78	60	26	4

Exercise 2

Object: To determine understanding of rain-bearing winds.

Content: Two diagrams representing a peninsula, through the center of which extended a mountain range, showed the wind belts for June and January. Directions were: (a) shade in regions of rain on each diagram; (b) indicate with "Y" regions having yearly rain.

Percentages for Test III, Exercise 2

	IV	V	VI	VII	VIII	E-VI
S	0	0	0	2	4	38
U	0	8	14	34	64	62
O	100	92	86	64	32	0

Inference: Failure to attempt Exercise 1, on the part of so great a percentage in the fifth and sixth grades indicates not even a passing acquaintance with the terms involved. In Exercise 2, the response of the group given special drill (E-VI) indicates that the interpretation and application of abstract facts is a power of slow growth. Too often winds are separated from

rainfall, and the interrelationship and interdependence of these two climatic elements is entirely ignored. Introduced and stressed when South America is taught, the material should be approached from every possible angle and referred to at every opportunity in country or product study, because the amount of rainfall and the season of its coming has so much to do with understanding geographic facts.

Exercise 3

Object: To determine ability to interpret isothermal readings.

Content: From a map of England showing isotherms for June and January, deduction of climate was asked.

Percentages for Test III, Exercise 3

	IV	V	VI	VII	VIII	E-VI
S	0	2	5	20	29	79
U	0	7	10	30	28	14
O	100	91	85	50	43	7

Inference: The response was similar to that in the planetary wind-belt story. Computation of temperature range and the use of this in the interpretation of the resulting climate proved difficult, but the success of E-VI is striking.

Exercise 4

Object: To determine understanding of isothermal lines.

Content: On a map of South America instruction was given to draw the isotherms, using (a) cities located on the map, and (b) isotherm readings for June and January given in a table.

Percentages for Test III, Exercise 4

	IV	V	VI	VII	VIII	E-VI
S	0	0	1	2	23	75
U	0	2	6	21	34	13
O	100	98	93	77	43	12

Inference: Two definite skills were involved, the ability to use facts presented in a table and an understanding of what isothermal lines mean. It is difficult to state which factor prohibited the attempt of the exercise. The actual construction of temperature maps leads to a keener comprehension of the meanings and limitations of isotherms, and should precede the use of textbook maps.

Exercises 5, 6, and 7

Object: To determine power to read and interpret diagrams.

Content: (5) Diagram of mountain in path of westerly winds. Location of rain areas was asked. (6) Diagram of delta river mouth, with location of city near head of delta. An explanation of the city location was asked.

(7) Diagram showing hill in path of the northeast trades and the resulting appearance of water table. Labeling and locating those factors which control an oasis region was asked.

		Percentages for Test III, Exercises 5, 6, and 7					
Exer.		IV	V	VI	VII	VIII	E-VI
5	S	1	48	39	54	64	100
	U	16	17	54	20	11	0
	O	83	35	7	26	25	0
6	S	0	27	18	16	50	100
	U	14	22	64	30	25	0
	O	86	51	18	54	25	0
7	S	17	35	48	42	64	100
	U	23	27	46	23	11	0
	O	60	38	6	35	25	0

Inference: Interest, evidenced in the responses, indicates that with some encouragement pupils readily illustrate written and oral reports in graphic style, thus clarifying and organizing ideas.

Exercise 8

Object: To determine what attempt is made to establish the habit of free rapid sketching of regions.

Content: Space left with direction to sketch and label any region from memory.

		Percentages for Test III, Exercise 8					
		IV	V	VI	VII	VIII	E-VI
S		3	22	38	28	63	58
U		14	25	49	29	12	42
O		83	53	13	43	25	0

Inference: A steady growth in this type of power is not apparent. Time spent in careful tracing or copying of maps, with little or no relative significance, is better devoted to the development of ability to make clear rapid sketches.

4. Test Four: Index and Appendix

Exercise 1

Object: To determine what use is made of the key and index.

Content: In the given list of words, indicate (a) syllables and accents, (b) pronunciation of "a," (c) means of recognizing best references, illustrations, and maps.

		Percentages for Test IV, Exercise 1					
		IV	V	VI	VII	VIII	E-VI
S		9	43	39	46	65	92
U		36	27	34	36	10	8
O		55	30	27	18	25	0

Inference: The uncertain growth of power suggests that effective use of index cannot be assured through incidental teaching. The advantages offered in alphabetical arrangement, the assistance in oral usage of words, and the economic value in location of material grow increasingly significant to even very young pupils when given sufficient drill to insure familiarity.

Exercises 2 and 3

Object: To determine ability to locate an exact piece of information.

Content: (2) Step by step the location of a certain piece of data was directed. (3) An exact quotation from the text was asked.

		Percentages for Test IV, Exercises 2 and 3					
Exer.		IV	V	VI	VII	VIII	E-VI
2	S	0	23	37	41	58	75
	U	2	25	26	23	17	21
	O	98	52	37	36	25	4
3	S	0	17	24	9	42	75
	U	0	14	11	10	8	8
	O	100	69	65	81	50	17

Inference: In Exercise 2, accuracy in final outcome seemed dependent upon power to read and follow directions. The outcomes indicate that pupils are incapable of performing such exercises very satisfactorily. The results, when directions are not detailed, as in Exercise 3, explicitly bear out the theory that teaching is not "telling, once and for all." The returns from the experimental group show that insistence through systematic drills, may eventually insure mastery of automatic, economic, and effective usage of the index.

Exercises 4, 5, and 6

Object: To determine skill in finding and using numerical data in the appendix.

Content: (4) Using area and population found in appendix, density of population of own state was asked. (5) Finding a variety of numerical data from tabulations in appendix was asked. (6) Formation of table using numerical data about cities, rivers, continents, and oceans was asked.

		Percentages for Test IV, Exercises 4, 5, and 6					
Exer.		IV	V	VI	VII	VIII	E-VI
4	S	0	40	30	48	43	75
	U	0	17	20	10	25	17
	O	100	43	50	42	32	8
5	S	0	51	20	31	50	50
	U	0	8	52	27	16	29
	O	100	41	28	42	34	21
6	S	11	41	27	32	43	67
	U	13	23	54	27	23	21
	O	76	36	19	41	34	12

Inference: The use of various textbooks, both in different classes and by individuals in the same class, made this summarization difficult. Although the authors differ greatly in material included in the appendix, most textbooks furnish valuable information, and constant reference to this should become automatic.

Exercises 7 and 8

Object: To determine power to interpret pictures.

Content: (7) From a picture of a desert scene, deductions of probable life habits and responses were asked. (8) From a picture of a mountain village, interpretations of climatic conditions and their resulting effect on industry were asked.

Percentages for Test IV, Exercises 7 and 8

Exer.		IV	V	VI	VII	VIII	E-VI
7	S	34	42	49	63	58	88
	U	33	47	44	32	36	12
	O	33	11	7	5	6	0
8	S	28	42	54	70	66	100
	U	37	42	35	20	28	0
	O	35	16	11	10	6	0

Inference: The conclusion is that too great a trust in the ready appeal of illustrative matter makes the abundance of excellent pictures a much neglected portion of the textbook. The tendency of authors is to present those pictures which provide definite instructional value and which display essentially geographical matter. Very early pupils may be profitably led to the effective use of pictures. From them new terms (*silo, harvester, glacier, fiord*) assume significance, comparative conditions become easily discernible, close observation of details makes strange scenes comprehensible, and the imagination reflects on the diversified lives of the world's peoples.

5. Test Five: Graph-Reading

Exercise 1

Object: To determine ability to interpret a picture graph.

Content: In a table the five leading states and their contribution to the United States beet-sugar production was listed. The task was (a) rank the states, beginning with the largest producer; (b) apply findings in (a) to diagrammatic pictures of beets.

Percentages for Test V, Exercise 1

	IV	V	VI	VII	VIII	E-VI
S	27	55	66	79	74	96
U	21	27	29	14	17	4
O	52	18	5	7	9	0

Inference: The willingness of even the fourth grade to attempt and somewhat successfully to handle this problem warrants the assumption that graphs make popular appeal.

Exercise 2

Object: To determine ability to construct a graph from given data and to determine ability to compute fractional values from such a graph.

Content: Minute detailed directions led to the construction of a graph portraying the comparative number of farmers in France and Great Britain. Questions led to the interpretation of values set up in the graph.

Percentages for Test V, Exercise 2

	IV	V	VI	VII	VIII	E-VI
S	13	48	80	82	87	96
U	4	14	10	16	13	4
O	83	38	10	2	0	0

Inference: With practically no difficulty, fifth-grade pupils approach graph construction when material and minute directions are provided. The inability to interpret the resulting graph substantiates the theory that mere copying is of no avail. Use must follow all such exercises. Here, as in map-training, the actual manipulation should lead to an appreciation of the value and should develop a ready desire for greater understanding.

Exercise 3

Object: To determine ability to read and interpret a bar graph.

Content: A bar graph pictured the monthly rainfall for Memphis, Tennessee, for a certain year. Questions led to reading and interpretation.

Percentages for Test V, Exercise 3

	IV	V	VI	VII	VIII	E-VI
S	6	22	53	64	74	88
U	12	17	23	16	15	12
O	82	61	24	20	11	0

Inference: The bar graph presents more general difficulty than the picture graph. However, its persistent use in textbooks and current reading dictates that it should be better understood.

Exercise 4

Object: To determine ability to tabulate readings from a line graph.

Content: Monthly temperature averages for Argentina for a certain year were given in a line graph. The problem involved tabulating the months and their respective temperatures.

Percentages for Test V, Exercise 4

	IV	V	VI	VII	VIII	E-VI
S	9	27	59	83	79	92
U	8	17	22	3	4	4
O	83	56	19	14	17	4

Inference: Apparently more easily read than the bar graph, its understanding may be due to its frequent use in classrooms for scoring individual progress. It is evident that the reading of a graph should precede attempts at interpretation. But neither phase of the work must be neglected.

Exercise 5

Object: To test ability to construct a circle graph.

Content: Percentage of population engaged in the several classes of occupations was listed. The problem was to show this distribution in the circle provided.

Percentages for Test V, Exercise 5

	IV	V	VI	VII	VIII	E-VI
S	0	6	16	33	43	38
U	18	11	34	43	31	54
O	82	83	50	24	26	8

Inference: The probable explanation for the limited response in this exercise is two-fold: for pupils below the seventh grade instruction in percentage is elementary, so that values expressed in this manner have little mathematical significance; then, too, the construction and dividing of a circle is decidedly a junior-high-school problem.

III. GRADE PLACEMENT

A suggested grade placement based on our findings should be of value both to supervisors, teachers, and textbook-makers.

IV. CONCLUSIONS

From these objective studies eight conclusions can be drawn.

1. Incidental teaching of correct usage of geography tools has failed.
2. The work is easily within the comprehension of the average sixth grade.
3. Agreement must be reached as to which tools are essential for fruitful labor in geographical investigation.
4. Through careful analysis of each step, the most effective procedures in usage must be ascertained.
5. Further studies should be made to determine in what grades each tool may be incidentally introduced, in what ones taught pre-

cisely, and in what ones drilled effectively. Thus the suggested grade placement we have made will be checked by more adequate trial.

6. With this information programs of study must assign definite placement to each tool.

7. Teachers must be made cognizant of the importance of correct usage in the study life of the child.

8. Teachers and pupils working together must endeavor to develop mature habits in investigation and study.

SUGGESTED GRADE PLACEMENT OF GEOGRAPHY TOOLS
(I, Incidental; T, Teach the usage; D, Drill on the usage)

Tool	Grade									
	IV B	IV A	V B	V A	VI B	VI A	VII B	VII A	VIII B	VIII A
I. Globe Study										
General Location	I	T	T	D	D					
Latitude		I	T	T	T	D	D	D		
Longitude			I	T	T	T	D	D	D	
Continents—Oceans	I	T	T	T	D	D				
II. Map Reading										
Route-Sketching (Direction and Scale)		I	I	T	T	D				
Legend-Reading	I	I	T	T	T	D	D			
Measurements to Scale			I	I	T	T	D			
III. Picture Study										
Observation	T	T	D	D	D					
Interpretation	I	I	T	T	T	D				
IV. Climatic Elements										
Location of Wind Belts			I	I	T	T	T	D	D	
Areas of Rain			I	I	T	T	T	D	D	
Isotherm-Making				I	I	T	T	T	D	D
Isotherm-Reading and Interpretation				I	I	I	T	T	D	D
V. Diagram Study and Use										
Rainfall against Mountain			I	I	T	T	D			
Delta Lands	I	I	T	T	D	D				
Oasis	I	T	T	D	D	D				
Original, Free Sketching	I	I	I	T	T	T	D	D	D	D
VI. Interpretation of Life										
Responses from $\left\{ \begin{array}{l} \text{Diagrams} \\ \text{Maps} \end{array} \right.$					I	T	T	T	D	D
VII. Index										
Pronunciation	T	T	T	T	D	D	D			
General Use	I	I	T	T	D	D	D			
VIII. Appendix										
Table-Making			I	I	T	T	D	D	D	D
Table-Reading			I	I	T	T	T	D	D	D
Statistical Computation										
IX. Graphs										
Picture Graph	I	T	T	D	D	D				
Broken-line—Bar: Reading		I	I	T	T	T	D	D	D	D
Graph Interpretation		I	I	I	T	T	T	D	D	D
Making Simple Graphs		I	T	T	D	D	D			
Making Circle Graph					I	I	T	T	D	D
Numerical Study in Graphs						I	I	T	T	T

CHAPTER XXX

MINOR CONTRIBUTIONS: FIVE STUDIES OF INSTRUCTION IN GEOGRAPHY

I

SYSTEMATIZING THE USE OF PICTURES IN TEACHING SIXTH-GRADE GEOGRAPHY

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I. THE GENESIS OF THE STUDY

Considerable incidental use of pictures in the teaching of geography resulted in the belief that an effort to make such work more systematic could be made to yield more valuable returns. The following account describes an attempt to combine picture study with text and reference work, with the definite aim of stimulating the pupils' interest and of making more real the life and places studied; in other words, to help the children secure a more intelligent understanding of life in far-away places, and therefore a more sympathetic interpretation of far-away peoples whose lives consist of the same problems and activities as our own.

The work was done during an eighteen-week period devoted in our school to the study of the continent of Europe. The pupils were a sixth-grade class numbering eighteen, taught entirely by a student teacher in the sophomore year under the guidance of the supervising teacher of the grade.

II. SELECTION OF THE PICTURES AND GENERAL METHODS OF USE

Starting with a small collection of pictures used with preceding classes, we added to the number from the usual sources: magazines, discarded texts, post cards, etc. A few rough standards aided our choice; viz., (1) Does the picture show some phase of man's activity in relation to his environment? (2) Is it simple enough for the pupils'

comprehension? (3) Does it help to illustrate, verify, extend, explain, or compare knowledge already gained? (4) Does it stimulate further inquiry or inference concerning the subject illustrated? (5) Does it contribute to geographic thinking; that is, does it cultivate the ability to see and interpret relations between man's activities and his natural environment?

From the standpoint of method the pictures were used in several ways: to introduce a unit of study, to supplement and interpret readings, to stimulate curiosity and effort, to make knowledge vivid and concrete, and to improve power in thinking and organizing. They also served as devices for reviews and tests, as a basis for language lessons, and as materials for programs for entertainments.

The results here reported are based on stenographic reports of pupils' discussions, except a few which are reports that they were asked to write. The purpose is not to show lessons in related sequence, but only to show the variety of situations in which pictures were used. The degree of success achieved must be evaluated by the reader.

The study of the continent was divided into several broad units: (1) familiar connections with Europe; (2) the life of the people seen through their work; (3) relation of this work to items of the natural environment, such as climate, soil, topography, natural boundaries, etc.; (4) comparison of elements included above with similar elements known about countries already studied.

III. THE PICTURE-STUDY UNITS

These several units were so developed as to harmonize with the plan of the course of study.

1. Introduction: Picture Interpretation with Brief Study

In an introductory study pictures with short titles that included the names of the places shown were distributed. After a moment for study each pupil reported briefly.

The following is a stenographic report of part of the introduction and a few of the pupils' answers.

Teacher: "Tell some of the kinds of work you learn that the people of Europe do."

Pupil: "They work in their fields."

P: "On the mountains they raise sheep."

P: "They raise cattle on the plains."

P: "They sail boats and ships."

P: "This picture is in England. There are sheep and there is a shepherd driving them. That tells me that they don't have a lot of traffic on this road."

P: "In this picture I see two men harvesting oats in Russia with an American harvesting machine."

P: "In this picture they are loading wheat for export from Russia. This makes me think that they raise more wheat in Russia than they use."

T: "What are some of the kinds of work that you see are done in Europe?"

Pupils: Farming, mining, fishing, making cloth, shipping, lumbering.

2. Pictures to Supplement Study

Work upon the continent was then continued more systematically and the problem of how the small continent feeds its large population was raised. Teacher and class then listed the points they thought were necessary to know concerning the production of grain: kinds of grains grown, regions and amounts, how cultivated, and uses.

These topics were used as a guide for a period of study. Each pupil was asked to write a short account of his findings. Each then chose a picture from a series that showed some phase of grain culture in Europe from which he might add some fact to his study or verify what he had written. The pictures were without legends, except that the name of the country was given.

The following paper is typical of those written:

Grains they raise in Europe are wheat, rye, barley, and oats, and some corn. They have about the same kinds we do, but not near so much corn. The climate where they raise grain is very much like ours in the United States.

The grains are grown in large amounts in southeastern Europe, especially in Russia. They have level land and large fields there. They are grown in smaller amounts in western Europe. Much grain is raised where there are not so many people, where there is plenty of land.

They use two methods of cultivating grain, by machinery and by hand. The machines are plows, tractors, binders, and combines. Some of them come from the United States. When working by hand, they use poor plows, hoes, scythes, and flails.

The wheat and rye are mostly used for food for people. The oats and barley are mostly used for the animals on the farm.

Most of the papers gave substantially the same facts. Some of the additions made after the picture study were these:

1. My picture shows that in countries of Europe many women work in the fields. I guess they get less pay than the men do.

2. I learned that in the Balkan countries cattle are used to tread the grain out of its hull instead of thrashing it. That is a slow and backward way to do it. It's not very clean either.

3. Children work in the grain fields in central Europe. Just as soon as they are able to do some duty it seems they take their places in the fields. This must be where the grain is raised by hand work. The fields look small.

3. Pictures as an Aid in Making a Summary

Next a study was made to summarize the work on wheat. The pupils were divided into groups of four or five each. To each group was assigned the completion of one or more headings of an outline of which the main topics were made by the teacher and the class together and placed on the blackboard as a guide. Groups of pictures, placed in sequence to show the processes of wheat culture in Europe, were displayed. After a period of study with the pictures, the outlines were submitted, and talks were given by members of the groups upon various topics.

The pictures had no legends, except that the countries were indicated. This was done as an aid in learning place names in geography, and for its value in helping pupils associate regions with types of progress.

Here is the outline made by one group (only main headings reproduced), followed by a stenographic report of talks given by the members:

Wheat Raising in Europe

- I. Places where grown: countries, climate.
- II. Planting: time, method.
- III. Growing in fields: size.
- IV. Harvesting: primitive and modern methods.
- V. Threshing.
- VI. Grinding: methods.
- VII. Shipping: where and why.
- VIII. Use for food.

Three Sample Talks by Pupils

1. The wheat fields of Europe are sometimes large and sometimes small. This depends largely on the size of the country and how dense the population is. Russia being the largest country in Europe, many wheat fields there are larger than those of other countries.

2. Wheat grows well in a place like France that has a moderate amount of rain and a temperate climate like Minnesota or Dakota.

3. Where they plant wheat by hand, they have small fields. They use a wooden plow drawn by oxen to break the soil, and sow the seed by hand. Where they plant it by machinery, they use a plow drawn by horses or a tractor, and the fields are very large.

4. Pictures to Begin a Topic

This study was begun by giving the class free access to the pictures available on dairying in Holland. The pupils were asked to learn from the pictures facts about the character of the country and how the work of dairying is carried on, then asked to refer to texts to verify their findings. These are some of the stenographic reports of their talks:

1. These fields are wide and flat, and they must have fine grass for the cows. All the country I can see looks as fine as a garden. They don't seem to waste any space.

2. All of Holland seems made up of plains, with not a stone any where. All the cows are black and white. It is funny how the men sometimes carry cheese. They hang it from wooden frames which are on their shoulders. Also I learned how much machinery they use to make butter and cheese with.

3. I noticed women milking. Some were carrying milk in pails on long pieces of wood. These pieces are hung around the women's shoulders. The pails have tight covers so they will keep the milk clean.

5. Pictures for Group Work in Outlining a Study

Sets of pictures showing the mining of coal, iron, and potash were mounted after a study of mining. Each set was assigned to a group of pupils who were asked, without further reading, to outline the points and prepare to talk. The work of one group is given here, including the written outline and the stenographic reports:

Coal

I. Countries producing it:

England, Sweden, Saar Basin, France, Germany, Czechoslovakia

II. How mined:

Strip mining: deep mining

III. Use made of it:

Fuel; coke for smelting; gas

IV. Other important things about coal:

1. When formed—many years ago

2. How formed—pressure long ago on fallen vegetation

3. Kinds—anthracite, bituminous, peat

1. Coal is about the most important mineral in the world. Europe produces a great deal of the world's supply. Some of the regions of Europe that produce much coal are England, France, Saar Basin, Germany, and Czechoslovakia.

2. Coal is obtained both by strip-mining, deep-mining, or tunnel-mining. When they find coal near the surface of the ground, they strip off the top layer and dig up the coal. In deep-mining they run a shaft straight down in the ground and run tunnels off in different directions. They blast the coal loose and then haul it up the shaft.

3. The men look as if they work very hard, and it must be dangerous from coal that falls down and sometimes from gas. A lot of boys are working breaking the coal.

6. Pictures Used as a Test

After a study of the forests of Europe, pictures were used in giving a test. Each pupil was given a picture with no legend, but with a question to answer by interpreting the picture in the light of preceding readings and discussion. Some phases of the study are omitted because suitable pictures were not available. These are typical stenographic reports of the statements of pupils:

1. Brush and branches are not seen lying in the forests of Germany, because they have cleaned them out, and for every tree cut, another is planted. Forest fires are not easily started when no brush is lying around.

2. The reason I can give from the picture that Italy has a large population is because there are grazing sheep in the olive orchards. This shows that they need all the space available to be able to make a living.

3. So many people of Switzerland carve toys, as this man is doing, because there is plenty of good wood from the forests on the mountains. They can't farm enough on the mountains to make a living; so they do it this way.

7. A Journey with Pictures

A very interesting bit of picture study was made in an imaginary journey down the Rhine. A large crayon sketch of the river's course, with adjacent countries indicated, was placed on the blackboard. To each pupil was given a picture scene of some activity along the river, with its subject named. Instructions were given to study that subject in the texts and reference books, and to determine in what place upon the map of the river the picture should be placed.

Next day each pupil placed his picture on the map, and gave his explanation. Stenographic reports follow:

1. We first see the Rhine high up in the Alps Mountains in Switzerland. The Rhine is only a tiny stream here. It is made from melted snow from the glacier we can see. It is small enough to jump across.

2. The stream gradually gets bigger as it flows down the Alps. It is joined by other streams from the melting glacier. We see boys watching goats and cattle along the banks. They use these animals for milk and cheese.

3. As we go down the river, we come to the Black Forest. There are some very dense places there, but the villages have open places along the edge. In the winter the men make cuckoo clocks and many toys. They send these toys all over the world. They cut these toys out of wood from the forest.

8. Pictures to Give a Rapid Preview

This was a free and rapid report, from pictures with brief legends, giving a bird's-eye view of life along the Danube, as an introduction to a more detailed study of the region. It is given here in contrast to the study of the Rhine, in which details were asked for. These are stenographic reports of the 'picture readings.'

1. Vienna is a large city on the Danube. It is the capital of Austria. It has many beautiful buildings.

2. Budapest is divided by the Danube River into Buda and Pest. In these cities they dress as we do.

3. Salt is mined in Hungary.

4. Here is an outdoor market in Belgrade, the capital of Yugoslavia.

5. In Czechoslovakia many farmhouses are made of wood, with straw roofs. The women sit outside and embroider. I have seen some of their work.

9. Organizing a Sequence of Pictures

This study was made from a well-organized and richly illustrated chapter on olives in a geography reader. Pupils and teacher examined the pictures together. The class then read the text rapidly. Books were laid aside; each pupil made an outline and planned his talk. One outline, much abbreviated, is given with a stenographic report of talks given from it:

Olives

1. Where grown. Countries, climate
2. How grown. In orchards, by peasants

3. Picking. Time, how
4. Curing. In brine
5. Manufacturing. Pulp crushed
6. Shipping. Oil, olives.

1. The greatest olive-producing countries of Europe are Spain, Italy, and Greece. This climate is very hot and has little rainfall, only enough for these small trees.

2. Olives are planted just as our orchards are, in rows covering great fields. I used to think olives grew on bushes, but this is not so, as I soon found out when I saw a picture of an olive orchard. Olives grow on trees just as our apples, pears, and other fruits do. Olives are harvested about the middle of September.

3. They gather the fruit by climbing high ladders and not the trees, as you can see. Men come around with donkeys that have baskets on their backs to put the fruit in.

10. Review, Using Pictures Thrown on Screen

In connection with the manufacture of textiles the pupils summarized their studies by making outlines and speaking from them as the pictures were thrown on the screen. A sample talk follows:

Linen

Flax is grown in Belgium, Ireland, Germany, and Russia. It needs a damp climate and many people to grow it. It is not cut like oats or wheat but is pulled up by the roots. This is done because the linen comes from the stalk, and if they cut it off it would shorten the fibers.

After it is harvested, the woody part has to be separated from the fiber. This is done by putting it in streams and letting the outer bark rot off. After that, they comb the fibers and spin them into thread. It is woven and bleached, then made into tablecloths and handkerchiefs and fine sheets.

11. Comparing Pictures of Same Subject

For another review exercise two pictures of the same subject were given to each pupil, one marked "Europe" and the other marked "United States." They were asked to notice differences and likenesses. These reports were taken:

Dairying

These two pictures show that dairying in Europe and in the United States is done mostly by modern machinery. Europe manufactures a great deal more butter and cheese than the United States does, but we have just the same kind of machines. A good deal of milk is delivered in Europe with dog carts or by hand.

I did not know that Europe had modern ways of manufacturing butter and cheese until I studied this.

Sheep-Raising

This picture shows sheep grazing in Europe. We notice that they are grazing on slopes, because Europe is more densely populated than the United States and mountain sides need to be used. The other picture shows sheep-raising in the United States. We notice that the sheep are grazing on the plains, because the United States is not so densely populated and can use its plains for sheep-raising. Both continents raise sheep where the climate is cold in the winter, more in Europe than in the United States.

12. Interpretative Study of Pictures

The following report shows the use of a more difficult type of picture which was used in a preview of the region to be discussed. The pictures were given without legends, and in each case the ability to relate the facts shown to knowledge already required, and from this relation to infer new facts, was called for. The assignment asked the pupils: (1) What does the picture show? (2) What do you know about the things you see? (3) What new idea does that suggest to you?

Typical answers by pupils are as follows:

1. It must be very cold where this shepherd works, for he is dressed all in sheepskin. It looks like a high mountain valley, for the trees are small and there is snow in the distance. I don't see any house. He must live down the mountain farther.

2. Here is a postman going his rounds on skates. That shows that the winter is long and cold and they have snow a long time.

3. Here is a whole family making toys by hand out of wood. The wood must be plenty, and not hard to get. It must be a cold country by the way they dress. And they must be poor by the looks of the room.

Such pictures offer opportunity to do more intensive study than do those which are more easily interpreted. They are very useful in helping pupils to organize the facts they know, and to stimulate effort in picture-reading.

13. Use of the Pictures for Entertainment

With the close of the term came the usual need to plan a program that should illustrate the work of the group to an audience. The unanimous demand came from the pupils to present a 'picture show' with the lantern. Slides were selected, and talks prepared. No un-

usual feature marked this number, except the keenness and naturalness that each showed in making his contribution of value.

In a second number of this program the class used a large outline wall map of Europe and photographs, post cards, halftones, and photo-gravures. Each child chose the pictures he wished to talk about. As the very brief talks were given, the pictures were attached to the map in correct places.

In addition to other values to the children these features of the program provided a strong motive and a live occasion for a thorough review. The program also provided a delightful opportunity to give geography-teaching an intelligent and pleasing interpretation to the audience.

14. Pupils' Opinions of Picture Study

At the close of the study the pupils were asked why they liked pictures and how the pictures helped in geography work. These answers were given without previous preparation:

1. Because it is more fun to look at the pictures than to read, and I can see it better.

2. As for the manufacturing, you can get a better idea and it does not tire you so much as to read.

3. Pictures are worth while because you can see minor details that are not told in books.

4. The lantern pictures on Mothers' Day helped us so that we will not forget the work of Europe for a long time.

5. They are worth while because we always learn more from them, because you always understand things better if you see pictures of them. It is more interesting to see pictures of what you are studying than to have to imagine them in your mind, and it is more interesting to study pictures than to read.

6. Our picture study helped me to know things you can't get from a book. It helps to make reading clearer. It gives you a better idea of the physical features of a continent and it shows you how people live there.

7. I never liked geography before. The places I studied about didn't seem real as they do now.

IV. COMMENTS AND CONCLUSIONS

It is unnecessary to point out the very obvious shortcomings of this piece of work. Some explanations may disclose our point of view and method.

1. The pictures used were almost wholly of the type showing man's work in relation to his natural environment. They were always chosen because of some bearing upon the unit of study, and, when necessary, to show sequences.

2. At every step the pupils were shown that picture study required and repaid earnest effort—that it was in no sense a mere diversion. Each pupil or each group was always held responsible for a definite result. Care was also taken to provide groups of pictures with sufficient similarity in content to make a verbal report intelligible to all—that is, to give the class a common experience for understanding throughout the discussion.

3. The teacher was kept conscious of the fact that she was teaching the *geography of Europe*, not simply *pictures*.

4. We tried not to lose sight of those important phases of geography that lie outside the province of picture study, *e.g.*, place geography and other map exercises.

5. We attempted to limit sufficiently the number and variety of pictures used in any exercise to prevent diffusion of effort and uncertainty of result. A few pictures, definitely assigned and thoughtfully studied, best repay effort.

6. In no sense was this a plan to teach geography exclusively by means of pictures. We had not the means at hand to carry out such a project, and we were not attempting any radical departure from our regular procedure. We did aim to use pictures as one of the means at our disposal for making clear the study of a continent and to have them so regarded by the pupils.

7. Thus provided and used, the picture exercises are limited largely to man's activities with his environment, and quite evidently lack in sequence and completeness. Since an exhaustive study of a continent can not be made with children of eleven and twelve years, the needful foundations for later systematic learning seem to be best laid through interests in people and their use of the environment. Much experiment can be made along this line.

8. Our pictures fell roughly into two classes: those showing clearly some definite meaning and those suggesting or stimulating pupils to infer or discover facts not directly shown. Those of the first type are clear enough to be interpreted by the pupils without much aid from their reading; those of the second type require more definite direc-

tions for use. Illustrations of these two types are seen in the exercises above on "Olives" and in the "Interpretative study of pictures."

9. In general, better results in understanding came from using pictures showing simple rather than complex processes—*e.g.*, those connected with the elementary activities of farm or market rather than those depicting more complex forms of labor.

10. The pupils were greatly stimulated through this study to an appreciative use of the pictures in their texts. In some books the illustrations are not related by position or by reference to the printed material. Sometimes, too, they illustrate a possibly picturesque phase of an activity, rather than one that is more prosaic but more typical of common life and of equal interest to children. It is also true that pictures fostering a provincial 'superiority complex' are more easily found than those which may cultivate that sympathetic understanding of distant peoples that a right study of geography is so well calculated to promote.

11. From the standpoint of the teacher's purpose the pictures used in the studies reported here may be divided into three classes: (1) those calculated primarily to arouse interest and a desire to investigate further (examples in the introductory study and in the study of dairying); (2) those selected to aid in the study and interpretation of the texts, as in the studies of wheat and olives; and (3) those chosen for checking and testing acquired knowledge, as in the study on forests.

12. Legends were variously used. Suggestive questions were of much value when the aim was to make concrete and vivid the images from the printed page. In tests a definite question was attached to each picture, and a definite answer was required. Pictures without legends were used to check readings quickly. Legends asking questions or indicating references are more valuable in teaching pupils to study than are those which tell outright the facts in the picture.

13. We believe that we may fairly claim some improvement over our usual procedure in securing the following values as a result of having lighted with pictures our pathway through the study of Europe: (1) Pictures give details which supplement and vitalize the statements of the printed page. (2) They help children to build vivid, concrete images of people in relation to their natural environment—hence they contribute to geographic thinking. (3) They make an instinctive appeal, through curiosity—hence facilitate the learning

process. (4) They aid in building a habit of studying and evaluating pictures in any text—a habit often lacking in adult students. (5) They increase the satisfactoriness of study with all children, but especially with pupils who have not their reading adaptation fully established. (6) Pictures help to avoid verbalism in discussion. While free discussion is a chief means of learning, much that happens in the classroom under the name has not sufficient concreteness of imagery as a foundation to give it real value. Well-chosen pictures are of real service in giving meaning to the children's thinking and speech. (7) The degree of interest and enthusiasm, the clearness of images, the growing realization of distant peoples as workers like ourselves, the avidity with which pupils and teacher attacked new problems made the geography hour an anticipated pleasure in each day's work.

14. There remain several aspects of this small field of endeavor that might profitably be further investigated: *e.g.*, (1) the types of studies most aided by using pictures, (2) the methods of assignment and study that are most efficient in each case, (3) exact means of evaluating results, (4) the question of learning *vs.* entertainment, (5) the most effective ways of using legends, (6) suitable assorting of pictures, (7) the use of pictures to overcome handicaps in reading ability.

II

FIELD TRIPS IN GEOGRAPHY IN THE ELEMENTARY SCHOOL

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I. VALUE OF FIELD TRIPS

Since geography is the study of the earth in its relation to man, it is of utmost importance that geography give to the pupils in the elementary school the opportunity for direct contact with the natural environment, in order that, as far as possible, the relations may be developed from concrete, first-hand observation and study.

Much geography, because it deals with far-away situations, must be carried on without such direct contact, but the ability to understand it is promoted by the ideas that have been gained from the direct contacts with other similar situations in earlier work. Since the materials gained in this earlier study are to be used constantly in later years in

constructing pictures of distant places and in interpreting far-away situations, field work is of vital importance as a means of giving to the pupils clear and accurate ideas out of which to build mental pictures and to develop bases for the interpretation of distant situations and relationships.

II. UNITS OF WORK IN WHICH FIELD TRIPS MAY BE USED

There is scarcely a topic in geography work that does not find a concrete basis in the immediate environment. The study of a larger regional unit that includes the home-geography unit gives an opportunity for field trips. Objective materials in the local community may be utilized at this time to give clear ideas concerning the larger region of which the local community is a part and of which it is typical. In the study of remote regions the local community may provide illustrative materials to be utilized. Many typical physical features, commercial products, and other things are frequently represented in the local community and museums, galleries, and other collections may provide opportunities for valuable field trips.

III. SELECTION OF FIELD TRIPS

Opportunities for field trips are many and varied. The time that may be devoted to them is relatively limited. The choice of field trips varies with the location and is determined by the local conditions. Care should be taken that as many different units as possible in any grade be enriched by the trips. Simple work in the lower grades may be followed by more complex work in the later grades, but in no case should field trips that are too complicated for the grade be undertaken. The number of field trips required by a large unit of work varies greatly. A single field trip may serve some needs of two or more units of work.

IV. PLANNING THE FIELD TRIP

Field trips should be thoroughly planned, with care not to include too much, and with all preliminary arrangements carefully made. The teacher should visit the place beforehand and arrange for any needed assistance.

The pupils' interest should be aroused, and they should have clearly in mind the points to be observed and the problems to be

solved. Introductory work should be done that the pupils may have the proper basis upon which to build and the necessary ideas with which to interpret what is to be observed. Care should be taken, however, not to try to teach before the trip the points that can best be taught during or after the trip.

V. CONDUCTING THE TRIP

The number of pupils to be taken on a field trip varies with the kind of trip, the age of the pupils, and the assistance available. The group should be limited to a number that can be handled safely and effectively.

The group should be so organized that the pupils know their places in the whole group and in the smaller groups into which the larger group may at times need to be divided. The teacher should be in a position where she is able to direct and supervise the work at all times. Definite signals should be clearly understood and promptly obeyed. Necessary cautions and directions should be clearly given and carefully followed. It should be understood that at all times right and helpful conduct is to be maintained.

The pupils should be kept in the mood to investigate and on the alert to solve the problems. Free or directed observation should come first; explanations and discussions should follow. There should be a sharp lookout for those things which have geographic significance. Many simple, obvious, geographic phenomena and geographic relations between man's activity and his natural environment will be discovered by the pupils themselves; others will need to be developed with them on the field trip or later.

VI. FOLLOW-UP WORK AFTER A FIELD TRIP

After a field trip has been taken, it is desirable to check the work and to follow it with other work based upon it. Ideas may need to be cleared; additional explanations may be required; wrong notions may need to be corrected. The pupils should be given an opportunity to express themselves and the ideas they have gained from the trip by suitable means. The field trip then becomes the basis and the starting point for further work upon the unit being studied and other units to be studied.

VII. A SAMPLE TRIP TO A CORN-BELT FARM

The importance of the agricultural phases of geography throughout the world justifies a concrete presentation of the various aspects of the farm and of farm work in the early intermediate grades, since it is here that the foundation for a large part of the later geography work is laid. An outline of a field trip to a farm in the Corn Belt taken in the fall of the year with a group of eighteen fourth-grade pupils will illustrate some of the possibilities that field trips afford for effective geography work in the elementary grades.

Permission to visit the farm was secured from the owner. The teacher made a preliminary visit to the farm, secured necessary information, and worked out a sketch map of the whole farm, showing fields, crops, and farmstead.

Living in a great agricultural region, these pupils had already been touched by the farm again and again. The study of food and clothing had brought the farm repeatedly to their attention. As a further preliminary to the trip, the pupils made a list of the things they would expect to see or would wish to see on a trip to a farm. They also listed some of the things they wished to learn about a farm. An organization of these lists resulted in a list of definite points to be worked out on the trip. The following are some of the points:

For what is each building used?

What animals are on the farm? What does the farmer do with them? How does he take care of them? How is milking done? What is done with the milk?

What machines does the farmer have? For what are they used?

What work is the farmer doing now? How is corn-husking done? What work has the farmer done with his crops during the year before this time? Where on the farm have the different crops been grown?

In addition, the teacher had in mind many other points that she hoped to find opportunity to develop.

The owner met the pupils at the farmstead, accompanied them, and assisted throughout the trip.

The buildings and different divisions of the farmstead were visited to find out what buildings and lots there were, for what they were used, and how they were fitted for those uses. The pupils were particularly interested in the cattle barn, the milk house, the hog house, the poultry houses, and the places for storage of crops.

All the animals, both livestock and poultry, were seen. The pupils found out how the farmer takes care of them, what he does with them, which ones are kept for work, which ones for sale, and which for meat or for other products. Questions by the pupils were such as these: What do the different animals eat? How do they eat? When are they fed? Where and how do they sleep?

The visit to the machine shed showed what machines were used and for what purposes.

A high driveway and a window in an upper story of the barn afforded good views of the orchard, the garden, and other parts of the farmstead. From these same places the pupils had views of the entire farm. They saw the farmstead in relation to the whole farm, the extent and shape of the farm, the fields, the lanes, the boundaries, a stream, and the main features of the relief of the land.

The pupils visited some fields and learned what was grown in each one, how they were separated from one another, why they were separated, how they were reached, their size, their shape, which crops were already harvested, and which were being harvested. They found out how some crops had been harvested and what had been done with each crop—storing, feeding, or selling. The question of a pupil as to why different kinds of crops were grown rather than just one kind brought out worth-while geographic ideas.

Corn-huskers at work in one of the fields were visited so that the pupils might see how the work is done. An opportunity was given to the pupils to participate in the work. Questions from the pupils brought out facts concerning the time and manner of planting and caring for the corn and the length of time from the planting season to the harvesting season. The daily work and the seasonal work on a farm were brought out during the trip.

Before leaving the farm, the group once more viewed the entire farm from the high driveway and the high window, seeing the relations of the different parts of the farm to the whole farm. They learned from the owner the approximate size in acres of the farmstead and the fields.

The follow-up work after the field trip proved to be interesting, stimulating and practical. A sketch map of the farm was worked out on the blackboard by pupils and teacher. Each pupil also made his own sketch map on a large sheet of paper. This gave an opportunity to recall the experiences of the trip, the things that were seen, and the general plan of the farm. The pupils wished to build up on the sand table a representation of the farm. This was done through coöperative effort during the activity period. The problems to be solved and the questions to be answered by the field trip were recalled. The important points were emphasized and summarized. Hazy ideas were cleared. Additional problems and questions were discussed.

From this field trip and the follow-up work the pupils gained definite ideas of distance, direction, and areas. They learned how the farm work is adjusted to the change of seasons during the year, and also to the changing length of day and night in the different seasons. The length of growing season in the Corn Belt was worked out. The characteristic climatic conditions and soil qualities were developed. The reasons for mixed farming were brought out. The pupils noticed the placing of the farmstead in relation to the relief of the land and the roads leading to the farm. They worked out ideas as to what the farmer provides for himself and family and what he

provides for other people. They came to understand that some of the farmer's needs must be met by people living in the cities.

A concrete basis was established and a starting point provided by this field trip and the related work for the development of the work on map making, transportation, communication, mining, manufacturing, and agriculture of various types.

VIII. SUMMARY

Field trips are vital in geography work in the elementary grades. They may be used in a large number of units and for many and varied purposes. Careful selection of those trips that are most worth while should be made. The planning for field trips should be definite and thorough. In conducting the field trips, well organized procedure is needed. Right conduct, along with freedom, is to be secured. Effective means and methods are essential. The follow-up work should be interesting and worth while. A reasonable number of well-chosen and skillfully conducted field trips in the intermediate grades gives a strong, concrete basis for geography work.

III

THE SCIENCE MUSEUM: A VITAL FACTOR IN VISUAL INSTRUCTION

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I. VISUAL EDUCATION AT THE MUSEUM BUILDING

1. The Museum in the Rôle of Instructor

The Buffalo Museum of Science is a highly specialized, modern building adequately equipped for visual instruction. The Museum has been laid out in the form of a great book, so that each room represents a single chapter in the story of science, and each exhibit a separate paragraph. Transparencies and labels accompany each exhibit case and provide a key whereby identification of objects within the exhibit may be made and individual learning facilitated. When information is read out of exhibits in this way without the direction of a teacher, the museum assumes the duties of guide and functions in the capacity of visual instructor.

2. Active Guidance in the Use of the Museum

Guidance in the use of exhibits at the Museum may take a more active form through the activities of the Museum's teaching staff. Grade-school pupils are brought by bus to the Buffalo Museum of Science every school day. After listening to a brief, illustrated lecture on the scheduled lesson topic, the children are divided into small groups and are conducted by science guides to study the lesson more intensively in the exhibit halls. Guidance is of paramount importance in the presentation of the lesson.

3. Effective Methods of Guidance

Procedure at the Museum is varied and followed by tests that provide a basis for comparing the results attendant upon the different methods. Variations take two forms: (1) substitution of a game card for the lecture of the science guide—the game card calls for an answer that must be found from individual study of the exhibit cases and pilasters; (2) substitution of a fifteen-minute illustrated lecture for the original thirty-minute one given before the pupils are taken upon the floor. Tests comprise a series of 'true-false' statements prepared to ascertain the amount of information acquired during the visit.

Although the effect of this method is to increase the potential educational value of trips to the Museum, a number of factors operate to limit the service available there, such as size of museum staff and building, facilities for transporting groups to and from the museum, and factors of time and distance. To provide for continuous visual instruction closely correlated with the everyday needs of the classroom, museum exhibits ought to be portable and to circulate among the public schools.

II. VISUAL INSTRUCTION WITHIN THE CLASSROOM

Museums now have special bureaus to provide visual materials that may be borrowed for educational use within the classroom. In general, the visual divisions of these museums operate on one of two systems: (1) visual materials are assembled and loaned, accompanied by typed or printed manuscripts; or (2) visual materials are sent out merely as separate objects without a manuscript or any suggestion for their use.

The potential service a museum may perform in the field of visual education is dependent, however, not only upon the care with which visual materials have been selected and assembled at the museum, but

also upon the way in which materials are used, once they have been loaned for classroom work. A loan bureau has recently been organized, as a branch of the Museum's Visual Education Division, to build up a collection of visual materials expressly designed to help in the study of geography. In accordance with this plan visual materials of three chief types are being arranged: (1) sets of charts, (2) sets of pictures, maps, and graphs; and (3) ungrouped miscellaneous pictures and objects.

1. Museum Charts for Use in Geography

A set of museum charts is composed of one or more separate 14 by 20 inch charts, each representing a single division of the subject to be studied. Pictures and objects are used as integral parts of the set, and to insure their coördinate use both are mounted on the one chart. A set of museum charts dealing with cotton, for example, has five distinct parts showing the distribution of the cotton-growing area in the United States; the appearance of a ripened cotton field; and the harvesting, baling, and manufacturing phases of the cotton industry. Manuscripts, similar to those discussed under the subject of picture sets, accompany the charts.

2. Museum Pictures for Use in Geography

Pictures may be one of four types: (1) motion pictures, (2) stereographs, (3) lantern slides, and (4) mounted pictures. Each type has its particular contribution to make toward the development of a lesson in geography, and no one type can discharge the functions of the others. Motion pictures possess great value in arousing interest at the beginning of a unit of study or as a means of summary at the end, but for intensive study during the fact-finding period of a lesson they move too rapidly and cover too much ground to be effective tools for assimilation. Stereographs, on the other hand, serve best as materials for the detailed study of a single phase of the lesson topic, contributing a sense of greater reality through the illusion of perspective they create. Lantern slides are intermediary between the two, since they may be used effectively either as tools for assimilation or as review. Important as the motion picture, stereograph, and lantern slide are, however, they fail in an important respect fully to meet the needs of geography, for they do not provide an opportunity for the study of a number of landscape views at the same time. The visual

loan bureau at the Buffalo Museum of Science is developing a collection of mounted picture sets, high in geographic quality, especially designed for this purpose. An example will serve to clarify the nature of the experiment now in progress.

3. Sets of Picture Materials with Geographic Quality

My illustration will take the form of a unit of museum materials designed to help teach the geography of the Lower Nile Valley. The pictures in this set have been chosen to express certain definite ideas that will characterize life in the Nile Valley. Each of the views in the set is high in geographic quality since each contains both cultural and natural features of the landscape. Together they touch upon the agricultural, pastoral, and commercial activities of the people; they show the kind of clothing the people wear and the houses in which they live—all in characteristic natural setting. The pictures chosen for this museum set and the major items of each one are as follows:

- a. Several loose-garbed Egyptians watching flocks of sheep and goats. The animals are grazing on the flat land along a branch of the Nile River. The stream is lined with palm trees.
- b. Tracts of cultivated land along the Nile River, showing the straight boundary lines which separate irrigated fields from the adjacent desert.
- c. A white-garbed native driving a yoke of oxen. The team is turning a huge wheel that lifts a series of water-filled jars from a well and empties them into one of the small irrigation ditches.
- d. Camels with bunches of reeds strapped to their backs. In the distance are flat-roofed mud houses.
- e. High-masted sailboats on the Nile River. The boats are loaded with bags of cotton.
- f. Piles of bagged cotton. Again there are flat-topped houses, and a camel is shown in the role of a beast of burden.
- g. A small dam or barrage across the Nile and the head of one of the huge irrigation ditches.
- h. A view in an Egyptian city (Cairo), showing the narrow streets and the overhanging balconies.
- i. A group of mud houses in a grove of palm trees on the bank of the Nile. An ancient pyramid in the background.

In the use of pictures a group of pupils may be guided through a set of questions and directions to think geographically and to find for themselves the solutions to the problems raised in their minds. A unit of picture materials such as the one on the Lower Nile Valley can, as you will see from the following typical questions, serve to introduce a pupil to the geography of the area.

- a. Find three kinds of work done by the people of the Lower Nile Valley in pictures A to I.
- b. Do the pictures make you think there is much or little rainfall in this river valley? Tell why. How does this fact help you to explain why grazing is carried on?
- c. Name two sources from which the people get water to irrigate their land in the Nile Valley. List the pictures in which evidences of these sources appear.
- d. Do the pictures that show farms suggest to you any reason why farming is carried on in these places? If so, what are they?
- e. What two means of carrying loads are shown in the pictures? How does the small amount of rainfall in Egypt help to explain one way of carrying burdens? In what two ways have you seen people making use of their great river?
- f. Perhaps you have already noticed that the sail boats used on the Nile River have very tall sails. Do you know any reason for this? If not, remember to look for an explanation later on in your reading.

4. Educational Value of Picture Sets

The educational value of the museum set on the geography of the Lower Nile Valley is dependent upon the objectives of the set and the particular devices employed to accomplish them. Primarily this visual material aims to develop certain initial fact concepts concerned with the geography of the area. It also aims to build up broad, general abilities that are transferable to other situations.

The pictures and manuscript in the set on the Lower Nile show that many of the people of this river valley make their living by irrigation agriculture and that this activity bears a direct relation to the rich silt deposits of the Nile River, on the one hand, and to the small amount of rain which falls in Egypt, on the other; that in a hot, dry land more clothing is needed to protect the skin from the scorching blaze of the sun than in an equally hot land that is moist; and that flat-topped mud houses are adequate to afford protection in a land where torrential rains are infrequent.

Provision has been made for concepts such as these because material of a particular kind has been chosen. Each of the mounted pictures in the set is high in geographic quality since it shows man or some phase of man's work in its natural setting. In some of the pictures the relationship between the human element and the natural element is readily discernible; in others, there is only a suggested relationship that needs further investigation and checking; in still others, no relationship can be detected at all. The absence of a discernible

relationship in museum materials raises a question in the mind of the pupil and motivates the reading he does in his text or library. Indeed, the first type of picture, the type from which relations may be easily read, serves likewise to give increased pleasure to his reading because of the association he has made between that reading and the pictures. In the second case as well, there is close correlation between his reading and his study of the museum material, for he must hunt in his reading for information to check the tentative conclusions he has drawn.

Aside from the actual facts that pertain to the lesson topic of a specific set of visual materials, the pupil will have gained something else in his study of materials of this kind. For example, such an exhibit gives practice in landscape reading and contributes in this way to the pupil's ability to select whatever cultural features may be present in the landscape and to turn almost automatically to the natural items for help in explaining them. The contribution made toward this goal is a matter of guidance in which attention is directed first to the cultural items and secondly to the natural items. Every direction given has the dual purpose of helping the pupil to discover new facts concerning the lesson at hand and at the same time to rely more completely upon himself in reading those facts out of pictures. An attitude of self-reliance and independence of thought is developed as a result.

Furthermore, the interest of the pupil is captured by the puzzle element in the set that challenges him to do his own thinking. The set of visual materials on the Lower Nile presents two distinct challenges: (1) the pupil must recognize for himself the various items represented by the pictures because they are unaccompanied by captions or by written explanatory material; (2) the pupil must establish the relation between cultural and natural features of the landscape.

Unfortunately, objective data concerning the comparative educational values of the several types of museum visual materials are not available. The experiment is too new to permit testing to be made. Even without data of this sort, however, certain tentative conclusions, arising from the differences in procedure, may be drawn.

III. SUGGESTIONS AND CONCLUSIONS

In summary, the following suggestions for the organization of museum materials are offered:

1. The material assembled should always be geographic in character, and the arrangement should be conducive to geographic treat-

ment within the classroom. In general it may be said that the greater part of the visual material commonly used in geography is nothing more than a collection of industrial raw materials and finished products accompanied by manuscripts that emphasize the industrial processes rather than the geography involved.

2. The material should be simple in arrangement, so that the pupil may center his attention upon single, important items of the set. At present he is confronted with a complexity of material, ranging from the raw, unginmed cotton, for example, to the finished textile.

3. The label should be of such a nature as to stimulate further investigative activity upon the part of the pupil. Too often the brief type of label accompanying each object dulls any curiosity that the appearance of the museum material may have in itself aroused.

4. Pictures, maps, and graphs, important tools in the study of geography, should be integral parts of the exhibit. Frequently, at present, they are merely supplementary parts. Sets of visual materials, when based on the principles applied in the illustrative examples cited, carry out these suggestions, and possess in addition the advantages of low cost of preparation and ease of portability.

5. Certain facts are clear regarding the service a museum may provide the classroom in visual education. The museum is a great laboratory, offering within its building wide and varied opportunity for learning. Education is not confined, however, within the limits of the building, for the museum, through its visual-education division, can extend the service it performs and reach every classroom where interest prompts the request of visual loans.

6. The museum, then, stands as a leader in the field of visual education and makes that field its specialty. There is no room in the overcrowded curriculum of the public school for the extensive study and search so necessary to the development of a carefully prepared collection of helpful visual materials. The program of the museum, on the other hand, makes definite provision for research, for the selection of materials, and for their preparation as exhibits. The museum has the space, moreover, to display its collections in good form; it has the staff to care for them and to offer guidance in the best use that can be made of them.

IV

SEGREGATION OF COLLEGE STUDENTS IN GEOGRAPHY

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I. PURPOSE OF STUDY

The purpose of this study was, first, to obtain some information of the interrelations of grades, intelligence ratings, point-hour ratios, and hours of study of university students in an elementary geography course, and second, to test the effect of segregating better students and enriching their geographical instruction.

II. SECURING DATA ON THE EXISTING SITUATION

1. Relation of Intelligence Score to Grade in Geography

In Table I the intelligence ratings, or I.Q.'s, of 286 students are shown in percentile distribution. The group 91-100 represents the top ten percent; the group 81-90, the next best ten percent, and so on. The final grade is indicated by letters: A, excellent; B, good; C, average; D, poor; and E, failure. The intelligence ratings are percentiles of the whole student body.

TABLE I.—INTELLIGENCE SCORE AND FINAL GRADE IN GEOGRAPHY

Intelligence Scores in Percentiles	Final Grade					Total
	A	B	C	D	E	
91-100	7	19	11	0	0	37
81-90	2	14	13	0	1	30
71-80	4	8	15	1	1	29
61-70	5	8	12	4	2	31
51-60	1	12	11	1	0	25
41-50	2	5	12	8	2	29
31-40	1	4	15	6	2	28
21-30	1	2	10	3	2	18
11-20	0	4	19	11	4	38
1-10	0	0	10	9	2	21
Total	23	76	128	43	16	286

The data show a fair degree of relationship between intelligence scores and final grades; with few exceptions, students with a high percentile received a good or excellent grade. Approximately 40 per-

cent of the A's and B's were in the superior group. Most of the failures occurred below the 50th percentile intelligence score.

Note, also, that geography attracts a representative class of university students, as is shown in the right-hand column—a condition that is contrary to general opinion.

2. Relation of Hours of Study to Grade in Geography

After completing a five-hour course in geography, these 286 students recorded the time spent per week in the preparation of their assignments. Their statements were submitted unsigned. For comparison, data were requested for two other introductory courses. These hours of study are tabulated in Table II in relation to final grade attained.

The results show that eight hours per week represents the average time spent in preparing the work of a course on the "Principles of Geography" at Ohio State University (one hour per day for five days weekly for twelve weeks). The most interesting point shown in this table is that hours of study are in inverse relation to the final grade; *i.e.*, the brightest students study least. The difference in time, however, spent by good and poor students in study is not very great—in contrast to a report from Oberlin College that poor students spend more than *twice* as much time on their studies as do the good students.

TABLE II.—HOURS OF STUDY PER WEEK AND FINAL GRADE

Final Grade	Hours per Week in Study														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	1			1	3	3	2	3		7				1	2
B			1	3	11	6	10	15	8	14	1	5		2	76
C		1	1	2	22	10	17	19	10	27	2	12	1	1	3
D		1			8	3	5	6	4	6	2	2	2	4	43
E		1					1	3	3	5		2		1	16
Total	1	3	2	6	44	22	35	46	25	59	5	21	3	2	12
															286

The general impression given by these data was that the lower and middle groups of students were doing even better than was expected and probably as well as they were capable; but that the upper group, the superior students, were not accomplishing what they might. In order to meet this situation and to give the superior students a greater opportunity to become geographically informed, it seemed advisable to segregate the better students from the fair and poor students.

students have been required to spend too much time in the usual classroom procedures. Probably three hours rather than five hours of instruction is all that is necessary for these students to meet the present requirements in "The Principles of Geography."

The study also disclosed the fact that there are some instructors who are better qualified to teach students with high ratings than students with low ratings and that the reverse is true of other instructors.

In colleges where admission is governed by rigid entrance examinations it may not be necessary to section large classes; but in a state university, where students are admitted on the basis of a high school diploma, it is essential for the best results to make some distinction in methods of instructing superior and poor students.

V

SOME CONCLUSIONS FROM TWO YEARS OF TEACHING GEOGRAPHY BY RADIO

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I. BROADCASTING STILL IN THE EXPERIMENTAL STAGE

When the Ohio School of the Air was organized three years ago last January, the director, Mr. Darrow, had several requests for the broadcasting of geography lessons by radio. Mr. Darrow met with a committee to consider what material in the geography curriculum for the elementary and junior high school might be broadcast and what methods of broadcasting would be most effective. After a few experimental programs, the director decided to have two geography lessons broadcast each week—one primarily for grades five and six and the other for grades seven and eight.

For two and a half years the writer has attempted to carry out this program of broadcasting two geography lessons each week. The lessons are a part of the regular program of the Ohio School of the Air and are broadcast for twenty minutes each Thursday afternoon from Station WLW in Cincinnati.

Although this work of broadcasting geography lessons has been going on for more than two years, and more than one hundred and fifty

lessons have been presented, we still regard it as experimental. At no time has there been any delusions as to the difficulties in the way of getting satisfactory results.

II. SOME BASIC DIFFICULTIES

As the work of broadcasting has proceeded, certain basic difficulties have come forcibly to our attention.

First, teaching is not telling. *No mechanical device can ever take the place of personal guidance which helps a child to attain results. The radio can supplement the classroom teacher; it can never be a substitute.

Second, education is always a conquest, never a gift. Mind grows by its own self-activity; it grows from within, not as a result of something imposed upon it from the outside. There is a tendency for pupils to remain passive during a radio lesson, and this tendency is to be recognized and combated. It will take the combined efforts of the radio teacher and the classroom teacher to insure the proper pupil activity.

Third, education to-day places much emphasis upon individual differences in children; some children are bright, others slow, others average. Now it is obvious that a radio lesson cannot be built to fit in with the needs and capacities of each child. A lesson prepared for the bright pupils will be 'over the heads' of the slow. The adaptation of the material presented to the individuals in the class will always be the peculiar work of the classroom teacher.

When we reflect on these intrinsic difficulties, it may seem that worth-while geography instruction by radio is impossible. But, on the contrary, the results achieved thus far tend to show that the radio may become a very important tool in giving instruction in geography.

III. SOME ESSENTIALS FOR SUCCESS

Successful radio lessons in geography are prepared with a conscious attempt to enlist the activities of the child. An effort is made to have as much activity as possible accompany the listening. During the broadcasting period frequent references are made to maps and children are asked to find items on maps.

An outline of the radio lesson, together with questions directing the classroom teacher and the children to the salient points in the

lesson, is made available for study. A printed lesson sheet containing activities to be carried out may perhaps be available for each child in future lessons.

Above all, the radio lessons must be built so as to appeal to the interests of the children. Without interest there can be no sustained effort. Without interest the children soon become inattentive and the radio lesson is perhaps worse than wasted time.

Radio lessons in geography must include and suggest activities that will result in habits of thinking in terms of relations. To build up such habits of reasoning and thinking is perhaps the greatest contribution that the subject can make.

IV. A SAMPLE REPORT FROM A SCHOOL

The broadcasting of geography lessons by radio is still in an experimental stage. It is difficult to reach definite conclusions regarding its value in all respects. Nevertheless, the comments made in hundreds of letters received from children, teachers, parents, school superintendents, and principals lead us to believe that certain significant values have already been achieved.

From Miss Laura Hibbard's report upon the use of the broadcasting at the Avondale School in Cincinnati as a basis for a part of the eighth-grade geography work are taken the following excerpts:

On Thursday afternoons from two o'clock until two-twenty, the Ohio School of the Air has been broadcasting a series of geography talks entitled 'Studies in Our Own Country.' We have used these talks as a basis for the eighth-grade geography and the result has been most satisfactory.

No matter how delightful a talk is, no matter how interested the children are, the work is of little permanent value if the class is not required to make a report of some kind. We have, therefore, adopted the following program: (1) As a preparation for the talk, the outline of the lesson is put upon the board and each point thoroughly discussed with the class. Maps are consulted, references looked up, and geographical principles that need explanation are made as clear as possible. (2) The day of the lecture, the classes are ready with paper and pencil a few minutes before two. They take down just as much of the talk as they possibly can. (3) On the following day, the notes are brought to class and each point is discussed in order. (4) As a homework assignment, the classes write out the talk in their notebooks. This may be done either in composition form or as an outline. This phase of the work has been most satisfactorily accomplished. The neatness of execution, the fullness of the notes, and the general comprehension of the talks have been in many cases better than we anticipated. In addition to the notebook report,

each child has been required to make certain maps and graphs. Then, to sum up their work, we have had tests based upon the talks.

In any school project the real test of the work is the way in which the children respond and the enjoyment they get from their efforts.

On February 26th the topic was 'How the Great Lakes Help the People in the North Central States.' On this occasion we tried an experiment with one of our groups. The children were left entirely alone during the radio hour. The next day they were to bring to class—not their notes for discussion—but a complete report of the talk. The result was most gratifying. The report was one of the clearest and best they had ever given.

Does not this open up new possibilities for the radio? Could not certain types of work be conducted without the immediate supervision of the teacher? Many definite benefits have accrued from our radio work.

We have been quite converted to the practical use of the radio in the schoolroom as an aid to geography.

CHAPTER XXXI

MINOR CONTRIBUTIONS: FIVE STUDIES OF THE STATUS OF GEOGRAPHY

I

THE STATUS OF GEOGRAPHY IN THE JUNIOR HIGH SCHOOL

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I. PURPOSE AND SOURCE OF DATA

The purpose of this investigation is to learn the present status of geography in the years of the public school commonly known as the 'Junior High School'; *i.e.*, the school years seven, eight, and nine are included.

Requests for descriptions of courses of study in geography in the junior high school were sent to all cities of the United States having populations of more than 50,000. A hearty response was had: 63 cities sent descriptions of their courses of study; 37 cities have no printed outlines at this time, in most cases owing to the fact that they are in the midst of revision; 6 cities reported that they were sending no outlines because of the fact that they have *social studies* and no *geography*.

The preceding statement does not mean that only 6 of the 126 cities have geography included in social studies, for of the 63 cities that sent descriptions of courses, 20 have geography under the heading *Social Studies*.

This study has made clear the fact that we have no agreement as to what should be the character of the geography work in the junior high school. It reveals further that superintendents, research departments, committees, and teachers are conscientiously and diligently striving to set up a course of study that will give to geography an opportunity to function as it ought in these transitional years of the school.

TABLE I.—STATUS OF GEOGRAPHY IN THE JUNIOR HIGH SCHOOLS IN CITIES OF MORE THAN 50,000 POPULATION

Three Classes of Cities by Population					
	More than 100,000	75,000 to 100,000	50,000 to 75,000	Totals	
Cities Solicited	94	26	69	189	
Cities Responding	74	12	40	126	
Sent outlined courses	39	8	16	63	
Have social studies with no distinct geography	3	1	0	4	
Have social studies with geography distinct	6	2	8	16	
Geography separated from social studies	30	5	8	43	
Grade Placement of Geography When Separated from Social Studies	Low 7 only	4	3	7	
	Low 7 and High 7	9	1	16	
	Low 7, High 7 and either Low 8 or High 8	4	0	1	5
	Low 7, High 7, Low 8, and High 8	11	1	1	13
	Low 8, or High 8, only	2	0	0	2
	Low 7 and Low 8, only	1	0	0	1

II. RESULTS

1. General Results Shown in Table I

By reference to Table I it will be seen that, of the 63 cities submitting outlines of courses of study, 6 percent have social studies with no distinct geography; 26 percent have social studies in which geography has a distinct place; and 68 percent give geography as a separate course in the curriculum.

Of the 43 cities in which geography is a separate study, 16 percent put it in the first half of the seventh year only; 37 percent, throughout the seventh year only; 11 percent, throughout the seventh year and in one half of the eighth year, either the first or the second half; 30 percent include geography throughout the seventh and eighth years; and 6 percent make various combinations of two semesters in the seventh and eighth years.

2. The Content of Junior-High-School Geography

Table II reveals the great diversity in the content of the geography in the junior high school. If any semblance of uniformity exists, it is in the study of the United States during the seventh year. Nearly half the 42 cities place the study of the United States in one or both semesters of that year; only two of these cities place it in the eighth year.

"Mathematical geography" and "geographic factors," either under those names or some names with similar meaning, appear eight times in the seventh year and four times in the eighth year.

Another noteworthy fact is that in about half these cities the geography in the junior high schools seems to be a continuation of the same type of geography that exists in the intermediate grades. Many courses appear to be the second cycle in a two-cycle course, closely following some special textbook.

In the eighth year the study of commerce of the world is quite prominent under such names as "Commercial and Economic Geography of the World"; "World Production, Transportation, and Consumption"; "Modern Business Geography"; "Industries of the World"; and "World Survey."

Of the 20 cities that make the United States an outstanding part of the work in the seventh year, 11 place it in the first half of the year and 3 of these 11 continue it in the second half of that year.

One-fourth of the cities that use only the first half of the seventh year for the final study of the geography of the United States devote only a part of that half-year to the United States. One city has not only the final study of the United States in this half-year, but also the British Empire, Germany, Scandinavian Countries, France, Italy, Russia, the Orient, and Latin America. In this last mentioned city, the geography has one half-year under a general heading "Social Studies," which includes "Geography," "United States History" and "Civics." In view of the geography content in one half-year, the following statement from the outline of this course is noteworthy: "These subjects are regarded as of very great importance to the young citizen."

3. Obscure Geography in Some Social Science Courses

As shown in Table I, six percent of the cities represented in this investigation have social studies with no distinct geography. In some

CONTENT OF GEOGRAPHY COURSES IN GRADES VII AND VIII IN FORTY-TWO CITIES
(Cities 1-29 have a population over 100,000; Cities 30-34 have 75,000-100,000; Cities 35-42 have 50,000-75,000.)

CITY	LOW SEVEN	HIGH SEVEN	LOW EIGHT	HIGH EIGHT
1. United States as a World Power	None	None	None	None
2. Asia, Africa, Australia	None	None	None	None
3. Western Hemisphere	Eastern Hemisphere	None	Commercial and Economic Geog. of the World (2 periods a wk.)	None
4. Home County, Home State, Europe	United States and Canada	None	Commercial and Industrial Geog.	None
5. Europe, Asia, Africa	None	None	None	None
6. Home City, Home State, United States by Regions	China and Japan, Our Import Trade	None	None	None
7. Foods, Fuel, and Power (of world)	Shelter, Clothing, Tools	None	Geog. of World Luxuries, Geography of Travel	World Production, Transportation, Consumption, Math. and Physical Geography
8. United States by Groups of States	United States by Groups of States	None	Current World Affairs—Leading Countries of Europe	Current World Affairs—China, Japan, Argentina, Brazil, Chile, United States
9. South America, Europe, Asia	Africa, Australia, Math. Geog., Sea, World Winds, Rainfall, etc.	None	None	None
10. None	United States (Interdependence), Geographic Principles and Laws	None	Interdependence of Countries (life and natural environment of chief countries outside United States)	Commerce of the World: (1) Development of; (2) Present commerce and its bases
11. Math. Geog., Geog. Factors, Home State	United States by Groups of States	None	North America outside United States, Europe	Commercial Geography of the World
12. Europe, Africa	Australia, Asia, South America	None	None	None
13. Industrial Nations in the Tropics (Mexico, Cent. America, West Indies, S. America, Asia, Africa)	Atlantic Highway—Europe & America, United States compared with world, Home State, Our North American Neighbors	None	None	None
14. Great Pacific Highway: Japan, China, Siberia, Philippines, India, Australia, Temperate South America	Review of World Geography	None	Modern Business Geography	Modern Business Geography
15. United States, Europe (geographic regions and trade)	Asia, Africa, South America, Australia (regions and trade)	None	None	None
16. Math. Geog.: Winds, Rainfall; Africa	Great Human Activities over the Whole Earth	None	Europe (cont'd); China, Japan	Asia (concluded); World Summary, Home State
17. North America	South America, Europe	None	None	None
18. Geog. of the World—Agriculture	Geog. of the World—Forestry, Mining, Trade & Transport, Animals, Meat and Dairy, Wool, Fur	None	Home State and City	Industries of the World, Food and Food Materials, Clothing Materials
19. None	None	None	Europe	None
20. Asia, South America	United States: Regions, As a World Power, Home State and Community	None	None	United States and Home State in Relation to the World
21. United States and Possessions, Home State	South America, Asia	None	Geography and Elementary Science	Current Geography
22. Trade of Atlantic Ocean	Trade of Pacific Ocean	None	None	None
23. United States: Geography of Economic Activities	Trade Relations of United States	None	World Survey: Economic Areas, Political Units, Topographic Areas, Climatic Areas, Land and Water, Math. Geog., Cultural	None
24. United States by Climatic Regions	Other Nations: Geography of Economic Activities	None	Math. Geog., Winds and Rainfall; Europe, Asia, and Africa	None
25. None	United States by Climatic Regions; Possessions of United States; Islands of the Pacific; Home State	None	United States: People; Geographic Bases for Strong Nation; Climates, Land, Resources	None
26. The World by Economic Activities	None	None	None	None
27. South America, Africa, Australia, Pacific Isles	The World by Economic Activities	None	None	None
28. United States and Dependencies, British Empire, France, Germany, Scandinavia, Italy, Russia, Orient, Latin America	United States and the World	None	None	None
29. Europe	Europe (cont'd); Africa, Asia	None	None	Economic Resources of United States; its Relations to Other Countries; How United States became a World Power
30. Local, County, Home State, United States in the Life of the World	Islands of the Sea	None	Geog. Principles, Interrelation of Nations, Comparative Study of Industrial and Commercial Nations	None
31. Latin America, Home State	Continue United States in the Life of the World	None	None	None
32. Math. Geog.: Winds, Climate, and Vegetation; Great Nations of the World	United States in Relation to the World	None	None	None
33. Latin America	None	None	None	None
34. United States in Relation to the World	None	None	None	None
35. United States, Home State	Math. Geog., South America, Africa, Australia, Europe, Asia	None	Important Countries of World, Producing and Non-Producing Areas, Geographic Principles Applied to World Regions	None
36. Home County, Home State	United States in Relation to World	None	None	None
37. South America, Europe, Asia	Africa, Australia, Home State	None	None	None
38. World Commercial Products: Cereals, Sugar, Meat, Fruit, Spices, Tea, Sea Food, etc.	World Commercial Products: Clothing, Shelter, Manufacturing Minerals, Trade and Commerce	None	None	None
39. Review and Intensive Study of Geography	None	None	None	None
40. Math. Geog.: Winds, Rainfall, and Vegetation; South America; Home State	United States from Industrial and Commercial View	None	None	None
41. Europe and Africa	Asia, Australia, Polar Regions, World Geog., U. S. as a World Power	None	None	None

cases this part of the curriculum is entitled "Social Science"; in others it is "Social Studies." These courses are admirable in their purposes and aims, but they fail in making plans for the achievement of a goal which is outstanding in geography; namely, *a knowledge and an appreciation of the likenesses and the differences to-day in the problems of people in the various sections of our own country and among the various nations of the world, as related to the natural environment.* This is fundamental knowledge in the development of an attitude of friendliness and a desire for mutual helpfulness among groups of people. The transitional years of the junior high school should not be permitted to pass without this opportunity for development of world citizenship.

III. EVIDENCE OF EFFORTS AT IMPROVEMENT

Earlier in this paper mention is made of the fact that school administrators are struggling with this problem of geography in the junior high school. The following quotations, taken from letters received in answer to requests for coöperation, are indicative of the considerable interest in this problem:

1. I am not well pleased with the course as it is at present. We are on the lookout for the right geography. . . . I shall be very much interested in the result of your study, particularly if it is accompanied by certain definite recommendations that may be helpful to us.

2. In our junior high school the geography work is taught incidentally as the need arises. We intend at some future time to carry our geography work into the seventh grade. We shall, therefore, await your work in this field with interest.

3. At the present time I am serving as chairman on a committee appointed for the revision of our junior-high-school course. . . . We shall look forward with interest to the yearbook on geography.

4. In our junior high school we as yet have no course of study in geography. We are using textbooks in social science Some time later we may prepare a course of study.

5. This (the course in geography) is not as up-to-date at present as we should like it. . . . I shall be greatly interested in the yearbook.

6. We face no more important task than the revision of our course of study. . . . I shall appreciate your comments on this set-up.

7. Our courses are in the process of making.

II

THE STATUS OF GEOGRAPHY IN THE SENIOR HIGH SCHOOL

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During the years 1927 to 1930 a survey was made to learn the extent to which geography was offered in the senior high schools of the United States. Questionnaires were sent to 500 school systems well distributed throughout the country: 151 in the Northeastern States; 103 in the Southern States; 179 in the North Central States; and 67 in the Western States. Replies were received from 371 cities, 74 percent of the total, with 70 to 80 percent from each of the four sections. The following are some of the significant facts disclosed by the survey.

Of the 371 senior high schools reporting, 259, or 70 percent, offer geography; 112, or 30 percent, do not include geography in the curriculum.

The 259 cities that include geography in the curriculum offer a total of 340 courses. Of this number, 79 are physical geography; 238 are commercial geography; 23 courses are given under other titles, some of which are by name: general geography, high-school geography, human geography, social geography, human ecology, world geography. Seventy-six, or 20 percent of the 371 schools reporting, offer more than one course in geography.

Geography is offered in each of the three years of the senior high school. Of the 333 schools reporting on the grade placement of geography, approximately 50 percent assign geography to the tenth year; 30 percent to the eleventh year; 15 percent to the twelfth year; and 5 percent to any year in which it may be chosen.

Of the 371 schools reporting, 60 make commercial geography a required study in the commercial course and elective in all other courses; 96 offer commercial geography as an elective in any course. Physical geography is offered as an elective in 79 schools. Geography work given under other titles than physical geography or commercial geography is usually elective, but in some schools required of those who expect to become teachers.

The percentage of high-school pupils taking geography varies from less than 5 percent in a few schools to more than 30 percent in a few schools. The range in most schools is between 8 percent and 25 percent.

A somewhat broader view of the offerings of geography in the high schools of the United States is indicated by the following: "The last figures available show that for the year ending June 30, 1928, the enrolment in geography classes in the high schools of the United States was 153,351."¹

According to the *Thirty-first Yearbook* of this Society, Part I, page 243, in 1927-28 the high schools in the United States offering physics numbered 7,346; those offering chemistry numbered 4,783; and those offering geography numbered 4,063. The following comment is then made: "The fact that it [geography] is offered in approximately as many schools as chemistry may be noted here as indicating trends in present offerings." On the basis of the number of pupils enrolled for the same year, chemistry had the larger number, 204,694; physics enrolled 198,402, and, as already stated, geography enrolled 153,351.

III

THE PRESENT STATUS OF GEOGRAPHY IN TEACHER-TRAINING INSTITUTIONS

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I. PURPOSE

This investigation has for its aim the analysis of the many courses in geography in the teacher-training institutions of the United States in order to ascertain the number and nature of the required courses of the various curricula, the number and nature of the elective courses, and the relation of geography to the general training of the individual.

II. SOURCE OF DATA

The study is based upon data supplied by institutions above the high-school level whose major emphasis is upon teacher-training. It does not include departments of education in universities and liberal-arts colleges, which may or may not offer courses in geography.

Detailed questionnaires requesting specific information were sent to the department of geography in every teacher-training institution in

¹ Reported by Cochran elsewhere in this chapter.

the United States. Many schools do not maintain a department of geography, but the questionnaires apparently in most cases reached the proper authorities. About seventy-five percent of them were returned properly filled out.

The courses may be conveniently divided into method courses and content courses; however, in many cases there is no hard and fast line between them. Some courses listed as method courses are almost wholly a study of methods; others emphasize content almost as much as method, or perhaps more so. Many courses listed as content courses are purely content in character, whereas others listed as content courses are professionalized-subject-matter courses.

III. THE FINDINGS

Some of the findings are presented in Table I; other findings are discussed in the paragraphs that follow.

IV. SUMMARY OF FINDINGS AND CONCLUSIONS

1. The method courses listed under the first five headings constitute a little more than fourteen percent of the total number of courses offered by all institutions; method courses preponderate.

2. In a few institutions, most frequently in the one-year or two-year normal schools, method courses only are offered. In most schools, however, either one or two content courses are prerequisite to method courses. Many teacher-training institutions offer no method courses in geography, apparently assuming that the students obtain sufficient method in either the general educational courses in methods or in the professionalized content courses.

3. Ninety-two percent of the institutions offer "Fundamentals in Geography." In some institutions the fundamentals are taught, not in a separate course, but in a 'continental' course. There is not so great a variance as to what is included in the first course as there was formerly. This course is in most cases a prerequisite to all other courses.

4. Seventy-two percent of the institutions offer "Economic Geography"; a few offer two courses in this subject.

5. The various continental courses occupy a significant place in the geography curricula of most teacher-training institutions. Those occurring most frequently are "Geography of North America," "Geography of Europe," and "Geography of South America."

TABLE I.—STATUS OF GEOGRAPHY IN TEACHER-TRAINING INSTITUTIONS

Courses	Number of Institutions Offering Course Listed	Percent of All Institutions Offering Course Listed	Percent of Gross Number of Courses
Methods in Geography (General) . .	81	53.6	6.2
Lower-Grade Methods in Geography	34	22.5	2.6
Upper-Grade Methods in Geography	39	25.8	2.9
Junior-High Methods Geography . . .	27	17.9	2.1
Senior-High Methods Geography . . .	9	6.0	0.7
Principles, Fundamentals, or Elements in Geography	139	92.0	10.7
Geography of North America	94	62.0	7.2
Geography of South America	69	45.7	5.3
Geography of Europe	93	61.6	7.1
Geography of Asia	37	24.5	2.9
Geography of Africa	10	6.6	0.8
Geography of Australia	3	2.0	0.1
Geography of the Eastern Continents	16	10.6	0.9
Geography of the United States . . .	21	13.2	1.5
Geography of Latin America	31	20.5	2.4
Geography of Home State	36	23.1	2.7
Economic Geography (Including commercial and industrial)	109	72.1	8.4
Geographic Influences in American History (Historical Geography) . . .	57	37.2	4.2
Political Geography (Geography of World Problems)	34	22.5	2.6
Mathematical Geography	4	2.6	0.3
Field Geography	33	21.2	2.5
Conservation of Natural Resources . .	33	21.9	2.5
Physiography (including Physical Geography)	84	55.6	6.4
Weather and Climate	24	15.9	2.1
Meteorology	16	10.6	0.9
Climatology	39	25.8	2.9
Human Geography or Anthropogeography	24	15.9	2.1
Geography of United States and Canada	10	6.6	0.8
Regional Geography of the World . .	8	5.3	0.4
Urban Geography	9	6.0	0.7

6. Field courses in geography are being added very rapidly to the curricula of the teacher-training institutions. These vary in length from a few hours each day of local field work to extensive trips of from two or four weeks in length covering several thousand miles. The more

extensive field courses are offered only during the summer. One type of field geography is "Urban Geography."

7. A few teachers colleges, it was revealed in the returns, are offering graduate courses in geography beyond the regular four years of work. In name and in form these courses vary little from undergraduate courses, but the material taught therein is on the graduate level. Research and seminar courses in geography are generally restricted to the graduate school.

8. The majority of geography courses offered in the teacher-training institutions are elective. The number of courses required varies from none to four. The course most frequently required is "Principles (Fundamentals) of Geography." In many schools this course is required of all students. "Methods (General) in Geography" is required by more than seventy-five percent of the teacher-training institutions. "Lower-Grade Methods" is frequently required of those who are preparing to teach in the lower grades, and "Upper-Grade Methods" of those who are preparing to teach in the upper grades.

Many other geography courses are required in certain curricula. "Geography of North America," "Geography of Europe," "Geography of South America," "Geography of the United States," "Economic Geography," "Geography of the Home State," "Political Geography," and "Physiography" are those courses most frequently required of those majoring or minoring in geography. "Economic Geography" is required in several institutions maintaining a commercial department. "Physiography" is frequently required of those students whose major is in science, whereas "Geography of World Problems" and "Geographic Influences in American History" are frequently required of those majoring in social science. Other courses listed in the table are often on the required list.

9. Sixty-one percent of the teacher-training institutions maintain separate departments of geography. Many of these are headed by specialists in geography; the number is being increased annually. In thirteen percent of the institutions geography is taught in the science department. Data as to just how comprehensive the science department is are not available from the questionnaires. Many schools report that, even though geography is taught in the science department, it becomes essentially a separate department. In several institutions it is noted that the science departments are headed by geographers. Nine percent of the institutions reporting state that geography is taught

in the social science department, in which geography is grouped with history and other social subjects. Six percent reporting did not state in what department the geography courses were taught.

The remainder of the institutions report geography taught in various departments; namely, geography and geology, natural science, economics and geography, geology, science and mathematics, education, agriculture, and history.

V. CONCLUSIONS

1. This study reveals conclusively that geography is recognized as an important subject in most of the teacher-training institutions. A much richer offering of geography courses is found in the largest teachers colleges, especially those with graduate schools; whereas only a few courses, and frequently none, are offered in many of the one-year or two-year state or municipal normal schools.

2. The avowed purpose of any teacher-training institution is to train teachers to teach in the elementary, junior-high, and senior-high schools of the state or city. Since geography is a subject taught almost universally in the elementary-school and junior-high-school grades, it would appear that most of our teacher-training institutions are attempting to meet their obligations, though it is obvious that some are attempting more fully than others to meet the demands and needs of the state or municipality which they serve.

3. It appears that in some teacher-training institutions geography is purely an ancillary subject with an ill-arranged sequence of courses designed primarily to meet the needs of other subjects. In other institutions geography is highly developed, with the definite aim to give a sequence of courses that are highly cultural as well as practical in value, and hence to contribute more fully to the aim of modern education in the development of the individual.

4. It is apparent from the analysis that the teacher-training institutions may be divided into three groups relative to geographic instruction. First, there are those institutions (only a few) that offer no courses in geography, yet purport to train teachers to teach in the elementary schools. Second, there is a group of teacher-training institutions that offer a few courses in geography in order to train teachers who can teach geography along with other subjects. Third, there are those institutions that permit the students to pursue geography as a

major or as a minor and offer many courses in the subject, so that they can train special geography teachers.

5. Most of the geography courses offered are elective. In general, there are more required courses in geography in institutions that train teachers only for the elementary grades than in those that train teachers for a great variety of positions. Institutions that permit students to follow a major or minor in geography require more courses in geography than others. Some courses are more often required than others.

6. A great number of geography courses offered by some teacher-training institutions, plus a strong geography faculty, is held to constitute a strong presumption that teachers of superior quality are taking up geography work in some sections of our country.

7. There is a tendency on the part of the heads of our teacher-training institutions to establish departments of geography differentiated from departments of physical science and from departments of social science. In the past, administrators have found it necessary to classify geography under some other department in order to minimize the number of department heads employed.

IV

GEOGRAPHY AS AN ADMISSION SUBJECT TO LIBERAL-ARTS COLLEGES

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I. INTRODUCTION

Most college-preparatory courses in the secondary schools allow the pupil, himself, some choice of subjects. Hence arise for one who is interested in geography certain questions. Granted that geography is available to many high-school pupils (in June 30, 1928, the enrolment in geography classes in the high schools of the United States was 153,351), what is the attitude of the college toward it? Will a pupil taking geography find it acceptable to colleges and universities as an admission subject? Do the colleges specify the subject, reject it, or just ignore it? Is geography acceptable for admission to the liberal-arts college, to the school of business, to the engineering school, and to other divisions?

II. SOURCE OF DATA AND RESULTS

In the attempt to answer some of these questions it was decided to study the situation in the liberal-arts college, and the problem was formulated as follows: Is geography (that is, commercial, economic or political geography—not physical) accepted as an admission subject by colleges of liberal arts?

It was felt that a sampling of one hundred colleges and universities, so chosen that every state and the District of Columbia would be represented, would give a true picture of conditions. Catalogs of the institutions selected were examined for admission requirements. Where geography was not named and statements in the catalog raised doubt as to its acceptability, the attitude of the college was determined by correspondence.

The results in tabular form are shown herewith.

GEOGRAPHY AS AN ADMISSION SUBJECT IN 100 COLLEGES AND UNIVERSITIES

State	College	Named in List of Admission Subjects (No. of units)	Not Named but Will Accept (No. of units)	Not Acceptable or Only Conditionally
Alabama	Birmingham-Southern Univ. of Alabama	$\frac{1}{2}$ $\frac{1}{2}$		
Arizona	Univ. of Arizona		1	
Arkansas	Univ. of Arkansas	$\frac{1}{2}$		
California	Stanford Univ. of California Univ. of So. Cal.		1 1 $\frac{1}{2}$ -1	
Colorado	Univ. of Colorado Univ. of Denver		$\frac{1}{2}$ -1 $\frac{1}{2}$ -1	
Connecticut	Wesleyan Yale		1	
Delaware	Univ. of Delaware	$\frac{1}{2}$		x
District of Columbia	Georgetown George Washington	$\frac{1}{2}$ -1	$\frac{1}{2}$ -1	
Florida	Rollins Univ. of Florida	$\frac{1}{2}$ $\frac{1}{2}$		
Georgia	Emory Univ. of Georgia		1	

Idaho	Univ. of Idaho	$\frac{1}{2}$ -1	
Illinois	Northwestern	$\frac{1}{2}$ -1	
	Univ. of Chicago	$\frac{1}{2}$ -1	
	Univ. of Illinois	$\frac{1}{2}$ -1	
Indiana	DePauw	1	
	Notre Dame	$\frac{1}{2}$ -1	
	Univ. of Indiana	1	
Iowa	Drake	$\frac{1}{2}$	
	Univ. of Iowa	$\frac{1}{2}$	
Kansas	Univ. of Kansas	$\frac{1}{2}$	
Kentucky	Univ. of Kentucky	$\frac{1}{2}$	
	Univ. of Louisville	$\frac{1}{2}$ -1	
Louisiana	La. State Univ.	$\frac{1}{2}$ -1	
	Tulane	1	
Maine	Univ. of Maine		x
Maryland	Goucher		x
	Johns Hopkins		x
	Univ. of Maryland	$\frac{1}{2}$ -1	
Massachusetts	Amherst		x
	Boston Univ.		x
	Harvard		x
	Mt. Holyoke		x
	Smith		x
	Wellesley		x
	Williams		x
Michigan	Univ. of Michigan	$\frac{1}{2}$ -1	
Minnesota	Carleton	$\frac{1}{2}$ -1	
	Univ. of Minn.	$\frac{1}{2}$ -1	
Mississippi	Univ. of Miss.	$\frac{1}{2}$	
Missouri	Univ. of Missouri	$\frac{1}{2}$ -1 $\frac{1}{2}$	
	Washington	$\frac{1}{2}$ -1	
Montana	State Univ.	$\frac{1}{2}$ -1	
Nebraska	Univ. of Nebraska	$\frac{1}{2}$	
Nevada	Univ. of Nevada	$\frac{1}{2}$ -1	
New Hampshire	Dartmouth		x
New Jersey	Princeton		x
	Rutgers	1	
New Mexico	Univ. of New Mexico	$\frac{1}{2}$	
New York	Columbia		x
	Cornell	$\frac{1}{2}$ -1	
	N. Y. Univ. (Univ. College)	1	
	Syracuse	1	
	Univ. of Rochester	1	
	Vassar		x
North Carolina	Duke		x
	Univ. of N. Carolina	$\frac{1}{2}$	

North Dakota	Univ. of N. Dakota	$\frac{1}{2}$ -1		
Ohio	Oberlin	$\frac{1}{2}$ -1		
	Ohio State Univ.	$\frac{1}{2}$ -1		
	Ohio Wesleyan	$\frac{1}{2}$ -1		
	Univ. of Cincinnati	1		
	Western Reserve	1		
Oklahoma	Univ. of Oklahoma	$\frac{1}{2}$		
Oregon	Reed	1		
	Univ. of Oregon	1		
Pennsylvania	Bryn Mawr			x
	Lafayette			x
	Lehigh	$\frac{1}{2}$ -1		
	Penn State		$\frac{1}{2}$ -1	
	Temple	$\frac{1}{2}$		
	Univ. of Penn.		$\frac{1}{2}$ -1	
	Univ. of Pittsburgh	$\frac{1}{2}$		
Rhode Island	Brown	$\frac{1}{2}$ -1		
South Carolina	Furman	1		
	Univ. of S. Carolina	1		
South Dakota	Univ. of S. Dakota	$\frac{1}{2}$		
Tennessee	Univ. of Tennessee	$\frac{1}{2}$ -1		
	Vanderbilt		$\frac{1}{2}$ -1	
Texas	Baylor		$\frac{1}{2}$ -1	
	Southern Methodist	$\frac{1}{2}$		
	Univ. of Texas	$\frac{1}{2}$		
Utah	Univ. of Utah	$\frac{1}{2}$ -1		
Vermont	Univ. of Vermont			x
Virginia	Univ. of Virginia	$\frac{1}{2}$		
	Washington and Lee		1	
	William and Mary	$\frac{1}{2}$		
Washington	Univ. of Washington		1	
	Whitman		1	
West Virginia	Univ. of West Virginia	$\frac{1}{2}$		
Wisconsin	Marquette	$\frac{1}{2}$		
	Univ. of Wisconsin	$\frac{1}{2}$ -1 $\frac{1}{2}$		
Wyoming	Univ. of Wyoming		$\frac{1}{2}$	
Total	100	38	43	19

Of the one hundred colleges and universities selected, thirty-eight considered geography sufficiently important to name it in their lists of entrance subjects; forty-three do not name it, but will accept it for credit; nineteen refuse credit for it or else hedge acceptance about with such requirements that the subject will probably not be offered by the pupil. Correspondence with the latter group of colleges about

geography as an admission subject brought out such phrases as "not acceptable," "cannot recognize," "has not been our practice to accept," "not possible for us to accept all of the stray subjects offered to us," "do not give credit," "will probably be allowed," "in some cases we do grant," "may be accepted." The colleges refusing admission credit are located almost exclusively in the East, largely in the New England and Middle Atlantic States.

In the 81 percent of the colleges and universities selected that will accept geography as an admission subject, the credit allowed ranges from one-half unit to one and one-half units.

Because the colleges definitely naming geography as an admission subject differ in their classification of it, this aspect was further analyzed. These thirty-eight colleges name forty geography courses for admission (Missouri and Wisconsin name two courses each). Of these forty courses, thirty-seven are labeled 'commercial geography'; the remaining three courses have the titles 'industrial geography,' 'high-school geography,' and just 'geography.'

These forty courses are variously grouped by the colleges, so that geography may find itself in any one of four classes. Ten courses are in the general class; that is, are in the same group with language, mathematics, history, etc. Seven courses are classed as science, four as social studies, and twenty as commercial or vocational. One of the universities listed accepts geography as either a science or a social study. Put another way, in half these colleges geography is regarded as a commercial or vocational subject.

It is possible that this alignment, for purposes of admission, with the commercial or vocational group has retarded the acceptance of geography, since this group of studies has had a struggle to secure recognition by colleges and universities. Numerous liberal-arts colleges recognize for entrance credits no course from this group of studies, and those that do recognize it commonly limit the number of units of credit that may be allotted to subjects so classed.

The character of the subject matter and the teaching of geography have probably been additional retarding factors in the matter of securing recognition. In times past, and unfortunately in some places still to-day, the treatment has been encyclopedic, with the class in charge of a teacher not trained in geography. The results have been anything but educational. A hint of such conditions is apparent in such replies as "accepted only after the high-school principal has submitted

course definitions giving the names of the textbooks used and the scope of the work covered," "credit . . . depends upon the work done and upon the rank of the school in which the work was completed."

III. CONCLUSIONS

1. Pupils preparing for liberal-arts colleges may in the majority of instances elect geography with the expectation that colleges and universities will grant it admission credit.

2. A region extending from Maryland to New England contains most of the institutions that do not accept geography as an admission subject.

3. Some of the colleges and universities included in (2) will consider geography when an outline of the course has been submitted by an approved secondary school.

4. The classification of geography by many colleges as a commercial or vocational subject places it in a class that is, as a whole, distinctly limited as to credits allowed by liberal-arts colleges.

5. Colleges are recognizing phases of geography other than the commercial. Growth along these other lines will probably make easier the securing of admission credit.

6. Since commercial geography receives the greatest attention in secondary schools, a syllabus or course of study for this subject prepared by some such national body as the National Council of Geography Teachers would undoubtedly aid in standardizing the subject to the point where it would be considered on the level with other admission subjects.

7. The growth suggested in (5) and the successful adaptation of the course of study proposed in (6) will depend upon teachers trained in geography.

V

THE STATUS OF GEOGRAPHY IN THE LIBERAL-ARTS COLLEGES OF THE UNITED STATES

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The following summary of the offerings of geography in the liberal-arts colleges is based on an examination of the annual catalogs of the

colleges in 1929. Requests for catalogs were made of the 661 liberal-arts colleges listed in the *Educational Directory* of 1929, issued by the Office of Education; 517 institutions answered the request.

Physiography and elementary geology, but not historical geology, were included in the summary. Geography (including elementary geology) is offered in 377, or 73 percent, of the liberal-arts colleges. Courses strictly in geography are offered in 268 institutions, or 52 percent. No geography in any form is offered in 140 institutions, or 27 percent.

Geography has found a place in coeducational institutions more largely than in men's colleges, and in men's colleges more largely than in women's colleges. Of the 338 coeducational colleges included in the survey, 80 percent offer geography; of the 84 men's colleges, 70 percent offer geography; of the 95 women's colleges 52 percent offer geography.

The 517 colleges included in this study enrolled 534,854 students, of whom 88 percent were in institutions offering courses in geography.

Geography has found its way into the college curricula, not so much by organizing independent departments of geography as by introducing geography courses into various departments in which the geographic point of view is desired. The term 'geography' appears as an independent departmental heading in 31 institutions, in combination with geology in 40 institutions, and in combination with geology and mineralogy in 6 institutions. Further data on this point appear in Table I.

TABLE I.—DEPARTMENTAL HEADINGS UNDER WHICH GEOGRAPHY COURSES ARE LISTED IN 377 CATALOGS, WITH FREQUENCY OF OCCURRENCE

(In some institutions geography was listed in two or more departments)

Departmental Heading	Frequency of Occurrence
Geology	207
Economics	51
Geology and Geography or Geography and Geology	40
Geography	31
Education	30
Business Administration	20
Economics and Sociology	14
Economics and Business Administration	11

Geology and Mineralogy	11
Botany	9
Biology	8
Physics	8
Biology and Geology	7
Geology, Mineralogy, and Geography	6
Science	6
History	5
Commerce	4
Chemistry and Geology	4
Commerce and Finance	4
Meteorology	4
Agricultural Economics	4
Physical Science	3
Commerce and Economics	3
Social Science	3
Geology and Physics	3
Commercial Education	3
Earth Science	2
Forestry	2
History and Economics	2
Secretarial Studies	2
Agronomy	2
Others appearing once only	43
Total	552

In most of the colleges the number of geography courses is small; 85 percent of the 517 colleges included in the study offer from 0 to 5 courses; 15 percent offer 6 courses or more. More than 50 colleges offer sufficient numbers of courses to constitute a major subject of 24 semester hours or more. A few institutions offer extended courses in geography leading to the master's and the doctor's degree.

In Table II the total number of courses in geography offered in 377 institutions are grouped and summarized under a few general headings under which the course titles appeared in the catalogs.

The examination of the catalogs revealed the fact that many of the teachers of geography in institutions offering more than the average number of courses had received their training in universities offering extensive graduate work in geography.

TABLE II.—GENERAL SUMMARY OF COURSE TITLES, FREQUENCY OF OCCURRENCE,
AND HOURS OF CREDIT

Course Title	Total No. of Courses Offered	Courses Indicating Hrs. of Credit	Courses Not Indicating Hrs. of Credit	Total No. of Hours Offered
Geology	317	301	16	1,193
Economic Geography	185	177	8	585
Continental Studies	182	173	9	463
General Elementary Geography	149	139	10	445
Physiography	118	114	4	403
Meteorology and Climatology	99	93	6	321
Commercial and Industrial Geography	84	80	4	276
All Others	444	368	76	1,080
	<hr/> 1,578	<hr/> 1,445	<hr/> 133	<hr/> 4,766

CHAPTER XXXII

MINOR CONTRIBUTIONS: TWO MISCELLANEOUS STUDIES OF GEOGRAPHY

I

CAN GEOGRAPHY CONTRIBUTE TO AN INTEREST IN, AND AN UNDERSTANDING OF, CURRENT MAGAZINE ARTICLES?

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I. STATEMENT OF THE PROBLEM

The outstanding function of magazines is to present an interesting and comprehensive picture of contemporary civilization. These purposes require the maximum of professional skill. From magazines many readers get a large part of their education and ideas. They glean a great many facts concerning the world of to-day, its eminent signs of economic change, a turn in religious opinion, or the indication of a difference in the social or economic spirit of a nation. Yet there are magazine readers who fail to get a fair appreciation of the worth of human efforts, to recognize man's specific adaptation of natural resources to man's usage, or even exhibit an interest in world affairs. There is fairly general agreement that now as never before a broad understanding of world-wide trends is an essential for genuine citizenship. Can geography contribute to an interest in, and an understanding of, current magazine articles?

II. THE GEOGRAPHIC CONTENT OF ARTICLES

The general procedure employed in considering this problem was (1) to classify and measure the material of a selected list of magazines to determine how much of it is geographic; that is, made up of the items involved in developing geographic thinking; (2) to determine subjectively to what extent the themes of the magazine articles are in harmony with recognized geography understandings, outcomes, or objectives; (3) to suggest how geography can contribute to the understanding of current magazine articles.

Before attempting these tasks, it was clearly necessary to decide what magazines were to be used and to set up some standard by which to measure the geographic material. While many types of magazines might have been chosen, it seemed preferable to use a random sampling of some of those which the intelligent, above-the-average-educated persons read. The names of the magazines used in this study are listed in Table I. Some of them are published weekly, others monthly or quarterly.

The standards used for measuring the material in the magazines was (1) the definition of geography, and (2) some generally recognized outcomes or objectives of geography. The writer took as a definition that "geography is a science which presents knowledge concerning the relationships of man to his natural environment, knowledge so systemized as to lead to the gaining of major understandings. The term 'man' is synonymous with 'human items,' which include the characteristics, conditions, attitudes, customs, and activities of people, all cultural features of the landscape, specific utilizations made by man of natural resources, distribution of population, and other cultural items. Natural environment includes the physical, the floral, and the faunal, and man's modifications of these." The outcomes accepted are those listed in an "Elective Course in Senior-High-School Political Geography," outlined by the National Council of Geography Teachers.¹

Using the concepts involved in this definition and these objectives as a measuring rod, every line in the articles listed was read and counted or rejected, after which the percentages were computed and summarized to get the total amount of 'geographic items' in each magazine. The writer recognizes that there are certain very obvious chances of error in this method. Another geographer would certainly make different interpretations. The personal equation is here a big item. But, as a further check upon the work, the magazines were examined a second time by the writer, and modifications in the data made where necessary.

Table I shows the results that were obtained by this process.

It will be noted that 42 magazines were used that included 550 articles of about 3217 pages. The amount of geographic material in the articles is rather high, as judged by the writer, ranging from zero to 96 percent. The highest total for any one magazine was found in

¹See Chapter XVIII.

TABLE I.—LIST OF MAGAZINES EXAMINED AND AMOUNT OF GEOGRAPHIC MATERIAL FOUND IN EACH

Magazine	Month	Year	No. of Articles Read	No. of Pages Read	Percent Geographic (All Articles)	Range of Percent of Article Geographic
Foreign Affairs	April, 1930		12	144	69.1	22.9 to 96
Foreign Affairs	Jan., 1930		13	132	36.9	17.1 to 65.9
Foreign Affairs	July, 1930		14	119	59	27.8 to 90.8
Current History	April, 1931		19	96	29.1	3.7 to 85
Current History	Mar., 1931		22	110	29.1	10.1 to 56.9
Current History	July, 1931		16	95	28.6	8.5 to 56.1
The Literary Digest	Oct. 24, 1931		26	25	28.3	3.3 to 95
The Literary Digest	Mar. 19, 1932		20	28	31.1	10.6 to 63.2
The Literary Digest	Mar. 12, 1932		23	27	38.1	10.5 to 86.5
Asia	Sept., 1931		10	53	25.3	10.1 to 46.9
Asia	Dec., 1931		8	64	14.6	4 to 32.8
Asia	Feb., 1932		8	63	20.5	3.6 to 30.4
The National Geographic	Sept., 1931		4	42.4	24.3	8.3 to 63.4
The National Geographic	July, 1931		4	54	15.4	1.2 to 22.7
The National Geographic	Dec., 1931		4	49	36.5	30.1 to 41.6
The Yale Review	June, 1931		10	165	23.3	4.7 to 75
Sewanee Review	July and Sept., 1931		12	106.5	20.5	0 to 92
Travel	July, 1931		12	55	20.1	9.6 to 30.2
Travel	Feb., 1931		9	45	35.3	10.8 to 87.6
Travel	Dec., 1931		10	49	25.1	5.9 to 52.8
Review of Reviews	Aug., 1931		37	55	19.6	0 to 60.1
Time	Nov. 9, 1931		15	80	19.5	0 to 25
Pacific Affairs	Sept., 1931		5	80	18.5	12.1 to 25.5
Pacific Affairs	Dec., 1931		4	53	41.9	21.2 to 45
Pacific Affairs	Jan., 1932		4	98	53.7	39.2 to 66.1
World's Work	Sept., 1931		13	40.5	17.8	1.2 to 41.1
Harpers	Sept., 1931		15	118	13.8	0 to 42.8
Harpers	Nov., 1931		18	122	19.8	6.8 to 44.2
Harpers	Mar., 1932		17	123	14.8	4.2 to 40.8
Survey	Nov., 1931		17	36	12	0 to 24.3
Forum	Oct., 1931		12	66	13.9	.1 to 56.7
Scribner's	Oct., 1931		14	110.5	11.4	1.3 to 59.3
Outlook and Independent	Nov. 25, 1931		11	20	11.1	2.8 to 25.3
The New Republic	Nov. 25, 1931		8	18	10.3	2.1 to 19.1
The New Republic	Mar. 9, 1932		11	20	35.3	5.2 to 58.5
The New Republic	Dec. 9, 1931		9	20	30.2	14.1 to 67.5
North American Review	Nov., 1931		10	85	8.3	0 to 22
North American Review	Jan., 1932		12	85	15.2	2.6 to 30.1
North American Review	Dec., 1931		12	87	17.8	.1 to 37.6
Atlantic Monthly	Aug., 1931		17	120	7.6	.8 to 18.4
Atlantic Monthly	April, 1931		15	129	8.4	1 to 39
Atlantic Monthly	Dec., 1931		18	129	11.9	.1 to 25.5

Foreign Affairs, with a percent of 69.1; the lowest occurred in the *Atlantic Monthly*, with 7.6 percent. The average for the total number of magazines was 23.0 percent.

III. THEMES THAT ARE GEOGRAPHIC

The second step was to determine subjectively the extent to which the themes of the magazine articles are 'geographic'; *i.e.*, in harmony with the definition and recognized geography outcomes or objectives. Table II shows the list of themes and the frequency of articles under each.

The first task in this second step was to group the articles into a series of themes, the themes being largely based on the various phases of human activity.

TABLE II.—FREQUENCY OF GEOGRAPHIC THEMES IN MAGAZINE ARTICLES

	<i>Frequency</i>
1. International Affairs and Relations (in general).....	31
2. American National Affairs.....	42
3. Foreign Affairs	
a. British Commonwealth: Government, Economics, Industry...	22
b. Other European Countries: Government, Economics, Industry	29
c. Near East: Government, Economics, Industry.....	2
d. Far East: Government, Economics, Industry, Militarism, Culture	12
e. South American Countries: Finance, Industry, Government..	8
4. Various Groups of Peoples of the World.....	18
5. National and World News.....	16
6. Travel in Various Parts of the World.....	23
7. Transportation	16
8. Natural and Cultural Environment.....	15
9. Government, Economics, and Industry in Various Countries....	47
10. Business and Professional Activities.....	14
11. Depression and Unemployment in Various Nations.....	17
12. Nation's Social Welfare and Religion.....	35
13. Science and Invention in Various Countries.....	18
14. Sports and Recreation in Various Countries.....	15
15. Ideas, Attitudes, and Ideals.....	27
16. Art, Literature, and Music.....	35
17. Outstanding Personalities and Other Individuals of Countries....	42
18. Education and Health.....	30
19. Hunting and Observing Wild Life in Natural Environments.....	6
20. Commerce	15
21. Historical Affairs	12
22. Others difficult to classify.....	3

A careful comparison of the well-recognized outcomes of geography with the themes of the magazine articles indicates that many of the

themes are geographic in implication at least; that is, they are themes involving materials concerning relations between man's activities and the natural environment. This indication may be further interpreted as meaning that there is geographic material (not necessarily expressed in geographic relations), and plenty of it, in current magazine articles.

IV. AN ASSUMPTION AND CONCLUSION

The next question is: Can geography give an interest in, and understanding of, current magazine articles? It is a well-known fact in education that one gets out of a thing what he puts in it, and no more. Geography gives interest and understanding of current magazines only in proportion to the reader's understanding of geographic relations and knowledge of the facts and possession of the concepts involved in these relations. These two factors must be considered together, for an untrained person cannot well recognize that which is, or is not, geographic. To one who is untrained in the field of geography, the various cities and regions are mere places; while to one with a geographic background, the mere mention of a place or region might be compared to an electric switch; touch it and there flash into the mind hundreds of meanings and associations that have been acquired as distinctive geographic attainments. On the south facade of the Union Station, Washington, D. C., there is carved a great truth: "He that would bring home the wealth of the Indies must carry the wealth of Indies with him." There is material aplenty in our magazines of the stuff out of which geographic relationships are woven, but it needs a weaver possessed of geographic skill to select out of tangled threads the warp and woof that go to form the geographic fabric.

In so far as this sampling list of magazines reveals, one is led to conclude that, in view of the fact that a large percentage of the items discussed in magazine articles, and a large percentage of the themes of these magazines, are geographic, as judged by the investigator, a knowledge of geography will give interest in, and an understanding of, current magazine articles if the reader will use a knowledge of geography in interpreting them.

II

THE NATURE AND QUANTITY OF THE GEOGRAPHIC
CONTENT OF SOCIAL-STUDIES COURSES

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I. PURPOSE AND METHOD

There have been published in recent years numerous courses of study in 'Social Science' or 'Social Studies.' This report presents the opinion of a group of graduate students at Teachers College, Columbia University, concerning the amount of geography to be found in several among the twenty-five such courses that were examined. Each of the graduate students examined for this purpose one of the courses in the social studies that had been evaluated as the twenty-five best ones in that field by the Bureau of Curriculum Research of Teachers College. Some courses were examined by two or more students and each report was discussed in group conferences.

In classifying part of the material as 'geographic,' the students had in mind as a definition of geography "the study of the inter-relationships existing between human beings and the natural environment." However, in estimating geographic content, the examiners classified as geographic more than could be classified under this definition of geography. They included also locational geography, *per se*, and distributional facts, *per se*.

II. SAMPLE REPORTS UPON TYPICAL COURSES

Sample A

This monograph on the social studies in a certain city purports to cover the four fields of geography, history, civics, and health. It represents the coöperative efforts of the elementary schools of the city covering a period of years.

The examiner of this course estimated the percentage of space devoted to geography in this monograph to be approximately as follows: Grade I, 15 percent; Grade II, 40 percent; Grade III, 12 percent; Grade IV, 20 percent; Grade V, 15 percent.

The length of time devoted to the social studies increases with the grades from 30 minutes a day in Grade I to 60 minutes a day in Grade V.

Although the introduction to the monograph states that unification was brought about by the final compilers of the monograph, it is the lack of this very thing that stands out most prominently in examination of the course. No attempt seems to have been made by any central authority or committee to fuse the various separate and naturally disjointed contributions of the several committees into a united whole. As a consequence, there is much duplication and overlapping of presentation, with the omission of much worth-while material that might have been included.¹

Sample B

This is a social-studies course for the kindergarten and first six grades made by the supervisors, principals, and teachers of a city system, with the aid of consulting experts in the special subject-matter fields. It took four years to prepare this course of study.

In the first grade, about 13 percent of the material may be considered geographical; in the second grade, about 13 percent; in the third grade, about 20 percent; in the fourth grade, about 65 percent; in the fifth grade, about 48 percent; and in the sixth grade, about 30 percent.²

Sample C

This state course of study in the social studies was prepared by a committee appointed by the state teachers association in coöperation with the state superintendent of public instruction for each grade of the junior and senior high schools of the state. After listing the purposes of the social studies as a group, the state committee sets forth the various purposes of the social studies under the seven specific headings: history, geography, sociology, economics, political science, vocations, and ideals.

The courses proposed for attaining these purposes are: Grade VII, "The Background of American Life"; Grade VIII, "United States History;" Grade IX, "The Practice of American Citizenship;" Grade X, "World History;" Grade XI, "American History;" and Grade XII, "American Problems."

The course plainly indicates that the committee that prepared it was thinking predominantly in terms of history. Obviously, if geog-

¹ This study was made by Miss Josephine F. Linehart.

² The examiners were Misses Ruth O. Bozart and Helena Wilson.

raphy is to be thought of at all, it is historical geography. In spite of the fact that geography is listed as one of the seven phases of the social studies, only the first division of the first year for the junior high school has a geographic heading. It is entitled "How Geographic Conditions Influence Human Life."¹ Sub-division A of this particular division, headed by the all-inclusive title of 'Climate,' includes such topics as "How Climate Affects Persons," "How Climate Affects Food Supply," "How Climate Affects Shelter," "How Climate Affects Vocations," "How Climate Affects Avocations," "How Climate Affects Population," and "How Climate Affects Commerce and Trade." Sub-division B deals with "Conditions Affecting Climate." There are four other equally inclusive and indefinite subdivisions. For the mastering of this whole division, with its six subdivisions, the class is allowed only *two weeks*.

Although hundreds of books are listed as references in this state course of study, only seven geographies are named and these are references for the first two weeks of seventh-grade work. Only two or three of these references are ever mentioned again.²

Sample D

Sample D is a course of study in the social studies for the elementary grades and junior high school. The committee that made this course of study consisted of twenty-one teachers headed by a general chairman who was called 'Director of the Social Studies.' In the elementary grades, one to six inclusive, it is quite evident that geography, history, and civics are taught as separate subjects, and the program for Grades VII to IX is almost entirely history. If geography is to be thought of at all, it would apparently be primarily historical geography. The junior-high-school program is as follows:

Low-seventh grade: "The Development of the Americas, 1492-1789," relating the historical, geographical, and civic aspects. This would involve historical geography only.

High-seventh grade: "The Development of the United States, 1789-1850," relating the historical, geographical, and civic respects. This also is obviously historical geography.

¹ This concept of the relation of man and his natural environment is no longer held by geography experts.—DeF. S.

² This study was made by Miss Martha Robins.

Low-eighth grade: "The Development of the United States, 1850-1900," relating the historical, geographical, and civic aspects. Again, historical geography is indicated.

High-eighth grade: "The Development of the United States, 1900 to the Present Time," with emphasis on world relationships, geographic and social. Much real geography could apparently be worked in here by one trained in the field.

Low-ninth grade: "The Local State and Community Problems," with the idea of orienting youth with his community. Much geography could be worked in here by one trained in geography.

High-ninth grade: "Vocational Opportunity," stressing the necessity of a wise choice of a vocation. Here there is apparently no geography.¹

Sample E

Sample E is a social-studies course for the junior high school of a city. This course was analyzed by the examiner from the standpoint of the following considerations: (1) What does the general statement in the introduction say in regard to geography? (2) Do the general objectives include those that are geographical in nature? (3) Does the general scope of the individual units include those of a geographical nature? (4) How much time is allotted to geographical material?

The conclusions under each heading were as follows: (1) The objectives are mainly historical. (2) The total number of general objectives were 12; of geographical objectives, 2. (3) The units of subject matter for each grade were: for Grade VII, 9 units (2 geographical); for Grade VIII, 5 units (0 geographical); and for Grade IX, 7 units (0 geographical). (4) The total number of weeks devoted to all the material was 108; to the geographical material, 5.

The general conclusion was that there is very little material of a geographical nature in this junior-high-school course.²

Sample F

This is a survey of the social-studies curriculum of a city for the elementary grades and junior high school. The fundamental feature of this course of study is its completely composite character. Common subject-matter lines have been wholly disregarded, except for the purpose of emphasizing some particular point of view in social living. It seems that ample provision has been made for the development of a

¹ This study was made by Miss Esther Stoll.

² This course was examined by Miss Alberta Fuller.

fairly good knowledge of environmental elements. It is evident that either an expert in geography was very influential in the committee or that those who made up the personnel of the committee were well trained in geography, and, having a fondness for the subject, gave it a prominent place in the entire course. This course apparently has done much more for the subject of geography than many of the so-called geography courses themselves.¹

Sample G

This report concerns a course of study in the social studies for a junior high school that was prepared by a specialist in geography, a specialist in history, and a specialist in civics. Their collaboration has done much to prevent the neglect of any one field. Another point in its favor is that the material was used experimentally by the collaborators over a period of several years before it was set down in the form of a curriculum. It is distinctly stated that the course is not an attempt to correlate the geography, history, and civics taught in the junior-high-school classes, but rather to fuse the information gathered from these subjects into a number of complete units of knowledge. This they hoped would be accomplished through the medium of problem-solving. A problem is chosen by the class for study and the subject matter of geography, history, and civics is drawn upon as a means to a larger end, that of solving the problem to the satisfaction of all. The problems are from present-day situations, although provision is made for the inclusion of history, geography, and civics of the past as they aid in the solution of the problem.²

III. GENERAL CONCLUSIONS

1. It is clear from these seven samples of twenty-five social-studies courses that there is a great amount of disagreement in their content.

2. In some cases the name 'social studies' is simply tacked on to traditional organizations in geography, history, and civics. This seems to be particularly true of the elementary schools.

3. In other courses the name 'social studies' represents a distinct attempt at the reorganization of the materials taken from geography,

¹ This analysis was made by Miss Ethel G. Merriman.

² This study was made by Miss Helen F. Scudder.

history, and civics into a fused course, based upon the solution of present-day problems. This seems to be particularly true of the junior-high-school material.

4. Most of the junior-high-school courses in the social studies seem to place much more stress on history and civics than on geography.

5. The senior-high-school material is almost exclusively history and civics.

CONSTITUTION OF THE NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

(As Revised at the 1924 Meeting and Amended at the 1926, 1928, 1929,
and 1932 Meetings of the Society)

Article I

Name.—The name of this Society shall be "The National Society for the Study of Education."

Article II

Object.—Its purposes are to carry on the investigation of educational problems, to publish the results, and to promote their discussion.

Article III

Membership.—Section 1. There shall be three classes of members—active, associate, and honorary.

Section 2. Any person who is desirous of promoting the purposes of this Society is eligible to membership and shall become such on payment of dues as prescribed.

Section 3. Active members shall be entitled to vote, to participate in discussion, and under certain conditions, to hold office.

Section 4. Associate members shall receive the publications of the Society, and may attend its meetings, but shall not be entitled to hold office, or to vote, or to take part in the discussion.

Section 5. Honorary members shall be entitled to all the privileges of active members, with the exception of voting and holding office, and shall be exempt from the payment of dues.

A person may be elected to honorary membership by vote of the Society on nomination by the Board of Directors.

Section 6. The names of the active and honorary members shall be printed in the Yearbook.

Section 7. The annual dues for active members shall be \$2.50 and for associate members, \$2.00. The election fee for active and for associate members shall be \$1.00.

Article IV

Officers.—Section 1. The Officers of the Society shall be a Board of Directors, a Council, and a Secretary-Treasurer.

Section 2. The Board of Directors shall consist of six members of the Society and the Secretary-Treasurer. Only active members who have contributed to the Yearbooks shall be eligible to serve as directors, and no member who, under the provisions of Section 3, has been elected for two full terms in immediate succession shall be eligible to reelection to succeed himself for a third term.

Section 3. The Board of Directors shall be elected by the Society to serve for three years, beginning on March first after their election. Two members of the Board shall be elected annually (and such additional members as may be necessary to fill vacancies that may have arisen).

This election shall be conducted by an annual mail ballot of all active members of the Society. A primary ballot shall be secured in October, in which the active members shall nominate from a list of members eligible to said Board. The names of the six persons receiving the highest number of votes on this primary ballot shall be submitted in November for a second ballot for the election of the two members of the Board. The two persons (or more in the case of special vacancies) then receiving the highest number of votes shall be declared elected.

Section 4. The Board of Directors shall have general charge of the work of the Society, shall appoint its own Chairman, shall appoint the Secretary-Treasurer, and the members of the Council. It shall have power to fill vacancies within its membership, until a successor shall be elected as prescribed in Section 3.

Section 5. The Council shall consist of the Board of Directors, the chairmen of the Society's Yearbook and Research Committees, and such other active members of the Society as the Board of Directors may appoint from time to time.

Section 6. The function of the Council shall be to further the objects of the Society by assisting the Board of Directors in planning and carrying forward the educational undertakings of the Society.

Article V

Publications.—The Society shall publish *The Yearbook of the National Society for the Study of Education* and such supplements as the Board of Directors may provide for.

Article VI

Meetings.—The Society shall hold its annual meetings at the time and place of the Department of Superintendence of the National Education Association. Other meetings may be held when authorized by the Society or by the Board of Directors.

Article VII

Amendments.—This constitution may be amended at any annual meeting by a vote of two-thirds of voting members present.

MINUTES OF THE WASHINGTON MEETING OF THE NATIONAL
SOCIETY FOR THE STUDY OF EDUCATION,
FEBRUARY 20 AND 23, 1932

As usual, the Society held two sessions, the first on Saturday, the second on Tuesday evening.

Both meetings were held in the auditorium of the United States Chamber of Commerce, a room that vied in attractiveness and comfort with the cathedral of the Masonic Temple where we met at Detroit in 1931, and were well attended—by approximately 1100 persons Saturday and 800 persons Tuesday evening.

FIRST SESSION—SATURDAY, FEBRUARY 20, 1932

This session, which was a joint meeting of this Society with the National Association for Research in Science Teaching and the National Council of Supervisors of Elementary Science, was devoted to a discussion of the Thirty-First Yearbook of the Society, entitled *A Program for Teaching Science*, prepared by the Society's Committee, S. Ralph Powers, Chairman; F. D. Curtis, Vice-Chairman; G. S. Craig; E. R. Downing; C. J. Pieper; and R. K. Watkins.

Professor Charters, Chairman of the Board of Directors, called the meeting to order promptly at eight o'clock, and with all the members of the Yearbook Committee on the platform, as well as Professor Persing, representing the National Council of Supervisors of Elementary Science (the National Association for Research in Science Teaching was already represented by members of this Society's Yearbook Committee), the following program was presented.

- I. "The Point of View of the Yearbook Committee."
S. Ralph Powers, Professor of Natural Sciences, Teachers College, Columbia University, New York City, and Chairman of the Society's Committee on the Teaching of Science. (18 minutes)
- II. "Contributions of Research to Practices in Science Teaching."
Francis D. Curtis, Associate Professor of Secondary Education and the Teaching of Science, University of Michigan, Ann Arbor, Michigan, and Vice-Chairman of the Society's Committee on the Teaching of Science. (18 minutes)
- III. "Teaching of Physical Science in the Senior High School."
Ralph K. Watkins, Professor of Education, University of Missouri, Columbia, Missouri. (18 minutes)
- IV. "Psychological Aspects of the Committee's Program for Science."
Frank N. Freeman, Professor of Educational Psychology, University of Chicago, Chicago, Illinois. (15 minutes)
- V. "Some Practical Aspects of the Committee's Program for Science."
J. Cayce Morrison, Assistant Commissioner for Elementary Educa-

tion, The State Education Department, Albany, New York.
(8 minutes)

VI. "The Relation of the Committee's Program for Science to the Nature-Study Movement."

E. Laurence Palmer, Professor of Rural Education, Cornell University, Ithaca, New York. (8 minutes)

VII. General Discussion from the Floor.

Open to members of the National Society for the Study of Education, the National Association for Research in Science Teaching, and the National Council of Supervisors of Elementary Science.
(Time limit: 3 minutes each)

The general discussion from the floor was brief, centering mainly upon the remarks that Professor Palmer had made with reference to the validity of certain features of the test material developed under the direction of Professor Powers. The discussion was closed by Professor Powers in behalf of the Yearbook Committee.

SECOND SESSION—TUESDAY, FEBRUARY 23, 1932

This session, which was a joint meeting with the National Society of College Teachers of Education, was devoted to a discussion of the Thirty-First Yearbook, Part II, of the Society, entitled "Current Changes and Experiments in Liberal-Arts Education," with special reference to the major findings of the Coöperative Study of Liberal-Arts Colleges made by the American Association of University Women.

On the platform, in addition to the speakers listed on the program, were several representatives of the organizations directly interested in that program; namely, Dean Lester Rogers, of the University of Southern California, and Professor S. A. Courtis, of the University of Michigan, President and Secretary, respectively, of the National Society of College Teachers of Education; Professor H. W. Tyler, Director of the American Association of University Professors; Dr. Robert Kelly, Director of the Association of American Colleges; and Dr. J. H. MacCracken, Associate Director of the American Council on Education.

Professor Charters, Chairman of the Board of Directors, called the meeting to order, introduced the Society's guests, and requested Dean Rogers to preside.

The program which follows was then presented as scheduled, with the exception that Dean Johnston and President Leigh were unfortunately unable to be present. A telegram from Dean Johnston conveyed his regrets and his good wishes for a successful meeting.

I. "The Purpose and Plan of the Yearbook"

Kathryn McHale, Professor of Education, Goucher College (on leave), and Director of the American Association of University Women. (15 minutes)

- II. "Some Major Phases of Experimental Change with Significant Illustrations."
- a. "Deviations from the Four-Year Homogeneous Unit."
Karl W. Bigelow, Professor of Economics, University of Buffalo, Buffalo, New York. (10 minutes)
 - b. "Honors Work, the Tutorial Method, and the General Examination."
Raymond Walters, Dean, Swarthmore College, Swarthmore, Pennsylvania. (10 minutes)
 - c. "The Adjustment of the Curriculum to the Individual Student."
J. B. Johnston, Dean of the College of Science, Literature, and the Arts, University of Minnesota, Minneapolis, Minnesota. (10 minutes)
- III. "English and American College Practices."
Agnes L. Rogers, Professor of Psychology and Education; Head of the Department of Education, Bryn Mawr College, Bryn Mawr, Pennsylvania. (10 minutes)
- IV. "Comments and Criticisms."
- a. C. S. Boucher, Dean of the College of Arts, Literature, and Science, University of Chicago, Chicago, Illinois. (8 minutes)
 - b. Robert D. Leigh, President, Bennington College, Bennington, Vermont. (8 minutes)
 - c. Fred J. Kelly, Chief, Division of Colleges and Professional Schools, United States Office of Education, Washington, D. C. (8 minutes)
 - d. Alexander Meiklejohn, Chairman, The Experimental College, University of Wisconsin, Madison, Wisconsin. (8 minutes)
- V. Discussion.
Open to all active members of the Society and members of the National Society of College Teachers of Education. (Time limit: 3 minutes each)

This program was unusually well presented and proved acceptable to the audience, unusually large for our Tuesday meetings. Particularly interesting to the audience seemed Dean Boucher's "How that Carolina woman can fly" parable, in praise of the industry of Dr. McHale, and Dr. Meiklejohn's provocative analysis of the functions of the liberal-arts college.

BUSINESS MEETING

The call for a business meeting of active members of the Society brought forth only a handful of participants. Professor Charters presided as chairman, and the Secretary explained the agenda, presenting the recommendation of the Board of Directors that Article IV, Section 2, of the Constitution be amended by adding the words italicized, so that Section 2, as amended, would read:

"The Board of Directors shall consist of six members of the Society and the Secretary-Treasurer. Only active members who have contributed to the Yearbooks shall be eligible to serve as directors, *and no member who, under*

the provisions of Section 3, has been elected for two full terms in immediate succession shall be eligible to re-election to succeed himself for a third term."

After some discussion of the purpose and effect of this amendment, of the way that the restriction of eligibility to "active members who have contributed to the Yearbooks" has worked out in practice, and of the effect upon the institutional and geographical distribution of membership upon the Board that was produced in the last election by the insertion on the ballot of the suggestion made by the Board that members of the Society should consider such distribution in their voting, the amendment was unanimously carried.

The discussion just mentioned made evident to all persons present the undesirability of having such important amendments debated and acted upon by so small a fraction (perhaps a dozen persons) of the Society's membership. It was accordingly moved by Professor S. A. Courtis, and voted unanimously, that the Board of Directors consider the possibility of revamping the constitution in such a way as to secure a more representative expression of opinion from the relatively scattered and loosely organized membership of the Society (as perhaps by securing a mail ballot upon amendments) and at the same time to retain the right of any group of members to request a business meeting of active members for the purpose of discussing freely any matters of general policy in the conduct of the Society's affairs.

GUY M. WHIPPLE, *Secretary*.

SYNOPSIS OF THE PROCEEDINGS OF THE BOARD OF DIRECTORS OF THE SOCIETY DURING 1932

This synopsis, indicating matters of importance only that have been considered by the Board of Directors, is presented in order that the members of the Society may be informed concerning the acts and policies of those who are directing the work of the Society.

FIRST 1932 MEETING OF THE BOARD

(Hotel Lafayette, Washington, D. C., February 21, 1932)

Present: Directors Charters, Freeman, Haggerty, Horn, Koos, and Whipple, and by invitation, Willis L. Uhl.

Absent: Director Bagley.

1. In view of the difficulties of arranging so-called 'reviewing committees' for the yearbooks, it was decided to drop the term 'reviewing committee' but to secure a series of critiques of the work of each yearbook committee whenever possible.

2. The Board concluded that the Society had now gone as far as it should in following up the Yearbook on the Textbook and that its participation in arranging conferences of publishers and educators should be limited to sponsoring the second conference of this sort recommended by the Advisory Committee on Textbook Problems.

3. The Board approved the formulation by the Secretary of the amendment to the Constitution, that was subsequently adopted at the business meeting of the Society in February.

4. Dean M. E. Haggerty, of the University of Minnesota, was elected chairman of the Board, to serve from March 1, 1932, for one year.

5. Guy M. Whipple was re-appointed as secretary, treasurer, and editor of the yearbook, to serve for three years beginning March 1, 1932.

6. Directors Bagley and Whipple were appointed to represent the Society at the New York meeting (December, 1932) of the A.A.A.S.

7. The Secretary reported the excellent progress being made by the Society's Committee on the Teaching of Geography under the chairmanship of Professor Parkins. It was agreed that the sum of \$750 should be available for the use of this committee in 1932.

8. Professor Lois C. Mossman presented in person a statement of the status of the work of the Society's Committee on the Activities Program as it was left at the death of Professor Bonser. The Board encouraged Professor Mossman in assuming the chairmanship of the committee to proceed with absolute freedom to carry on the work of the committee, and the Board added to the committee Professors Ernest Horn and W. H. Kilpatrick.

9. Professor L. J. Brueckner presented in person an outline of a tentative program for a yearbook on educational diagnosis. The Board placed at the

disposal of Professor Brueckner special funds to assemble a group composed of Professors Buswell, Travis, Olson, Tyler, and himself for a conference on this proposed yearbook, which was to be followed by a report to the Board by Professor Brueckner.

10. Discussion of a yearbook on "The Superintendent," proposed by Professor Fred Engelhardt, was deferred until it should become clear whether this yearbook would overlap or duplicate in part plans being made for a yearbook on a similar subject by the Department of Superintendence.

11. Discussion of a yearbook on educational planning was deferred, awaiting the return to the United States of President Coffman of the University of Minnesota.

12. Mr. Dinwiddie, of the National Child Welfare Committee, presented in person an outline of a yearbook proposed by him on "Education in Relation to Vocation." The Board voted to join Mr. Dinwiddie in approaching some foundation for funds to be expended jointly by this Society and the National Child Welfare Committee in a preliminary exploratory study of the topic, with the implication that if this study proved valuable, further development of the topic would follow.

SECOND 1932 MEETING OF THE BOARD

(Hotel Madison, Atlantic City, New Jersey, December 29, 1932)

Present: Directors Bagley, Haggerty, Horn, Uhl, and Whipple.

Absent: Directors Charters and Koos.

1. A report from the publisher was presented showing which yearbooks had been most successful from the point of view of commercial sales. The most successful yearbook was that on Reading, of which the sale had been approximately 34,000 copies.

2. The Secretary reported that the recent appeal to associate members to become active members had induced approximately 12 percent of the associate members to make this change.

3. The Secretary urged the presentation to the Society of an amendment to the Constitution abolishing associate membership. It was decided by the Board, however, that this matter should be laid on the table until the time seemed to be more favorable.

4. The Secretary presented for the information of the Board an account of the circulation in some sections of the United States, by some person or persons not specifically identified, of so-called "Advance Sheets from the Geography Yearbook of the National Society for the Study of Education." The Board endorsed the method by which this situation had been handled by the Secretary and it was voted that every effort should be made to make clear to all members of the Society that every member of the Geography Committee had been cautious not to divulge in advance any of the policies advocated in the yearbook; in short, to make clear that these so-called "Advance Sheets" were entirely spurious.

5. The Board fully endorsed the various steps taken by the Secretary in enforcing the regulation of the Society that only active members should

be contributors to the Society's yearbooks. It was agreed that in exceptional cases this regulation might be suspended, but only upon action of the Board of Directors.

6. It was voted not to prepare a special abridged edition of the forthcoming Yearbook on Geography, but to seek to encourage its use by placing the price at as low a figure as would be consistent with a reasonable return to the Society.

7. A report prepared at the request of the Board by Professor S. A. Courtis with respect to amending the Constitution in certain respects was carefully considered. The Board voted unanimously that no change should be made with respect to the provisions for holding general meetings of the Society, but that the Secretary should submit at the business meeting of the Society at Minneapolis in 1933 a proposed amendment to the Constitution that would thereafter insure a vote by mail on proposed amendments to the Constitution and also permit such proposals to be initiated by active members of the Society through petition to the Board.

8. The Treasurer presented an analysis showing that the prevailing economic depression had not seriously reduced the income of the Society or the number of members; furthermore, that there had been no particular increase in expenses and in some items, indeed, a decrease.

9. Reports of the work of the Society's yearbook committees on Geography, on the Activities Program, and on School Buildings were considered. Measures were taken to encourage and assist the last two of these committees in their work in order to insure the completion of their yearbooks in time for publication in 1934. These measures included the placing at the disposal of the Activities Committee of sufficient funds to permit this committee to hold another meeting if it seemed desirable.

10. The Board formally organized a committee of the Society to produce a Yearbook on Educational Diagnosis. Professor L. J. Brueckner of the University of Minnesota was appointed as chairman, and there were appointed as additional members of the committee Professors Buswell of Chicago, Olson of Michigan, Tyler of Ohio State, Travis of Iowa, and Drs. P. T. Rankin of Detroit and J. A. Stenquist of Baltimore. The sum of \$750 was placed at the disposal of this committee for use in 1933, and the committee was urged to prepare a yearbook, not to exceed 300 pages, that would be especially designed for use by the classroom teacher, and to attempt to have this material ready for publication in 1935.

11. Action on Mr. Dinwiddie's proposed study of "Education in Relation to Vocation" was temporarily postponed, waiting further information from certain organizations.

12. Action on the proposed yearbook on "The Superintendent" was similarly postponed, waiting the appearance of the yearbook on this topic being prepared by the Department of Superintendence.

13. President Coffman was found not to be interested in the chairmanship of a yearbook committee on educational planning, and it was concluded that material on this topic was likely to appear shortly from other sources.

It was voted to take off our list this proposed yearbook. In its place it was suggested that a yearbook on "The Organization of Higher Education in the United States" might be developed. Director Haggerty was asked to present a report on this suggestion at the next meeting of the Board.

14. No action was taken on the suggestion, which had been previously indefinitely postponed, that a yearbook be prepared on "Methods."

15. The proposal submitted by Professor H. T. Manuel of the University of Texas concerning a possible yearbook on "The Education of Bi-Lingual Children" was reported along with the conclusion reached by the Secretary and Professor Manuel that this yearbook would probably not have sufficient general educational interest to warrant the Society in undertaking it.

16. A suggestion submitted by Mr. C. C. Certain that the Society might undertake a yearbook dealing with school libraries was discussed, and the decision was reached that, in the form proposed by Mr. Certain, the proposal would not promise to be of sufficient interest to justify a yearbook.

17. As an outgrowth of this discussion of Mr. Certain's proposal, however, it was felt that a yearbook might be undertaken that would deal with the whole matter of classroom equipment, including maps, globes, museums, etc. Director Uhl was requested to report at the next meeting of the Board concerning possibilities of such a yearbook, to be entitled "Materials for Classroom Instruction."

18. The correspondence between the Secretary and Mr. Hatfield, representing the National Council of Teachers of English, was considered at some length, and the Board was sympathetic with the suggestion that a yearbook on a program of English in the elementary school might be valuable. Subsequently it was learned, however, that Mr. Hatfield and his associates had made other plans for the publication of their material.

19. A proposal made some time ago that a yearbook be considered on the "Fine Arts" was discussed once more. The decision was made finally that Director Uhl report at the next meeting of the Board on the possibility of a yearbook on a restricted portion of this field; namely, on "Music in the Public Schools."

20. The Board considered at length various suggestions submitted by Chairman Parkins of the Geography Committee for the program at the Minneapolis meeting of the Society, with the result that the Secretary was given specific instructions for developing these programs in consultation with Chairman Parkins.

21. The Board re-affirmed its previous decision that this Society should coöperate with Section Q of the A.A.A.S. in arranging for a meeting to be held during the Chicago exposition in the summer of 1933 if those in charge of the meeting of Section Q so desire.

22. A proposal advanced by Professor Fred Engelhardt that this Society might prepare every year or every two years a brochure summarizing the contributions to education of distinguished educators who had died during the preceding year or two years was considered, but it was the opinion of the Board that this was not an undertaking that this Society should engage upon.

REPORT OF THE TREASURER OF THE SOCIETY FOR 1931-32

STATEMENT OF RECEIPTS AND EXPENDITURES FOR THE YEAR MARCH 1, 1931
TO FEBRUARY 29, 1932

Balance on Hand, March 1, 1931, per prior report..... \$20,887.82

RECEIPTS

From Sale of Yearbooks by the Public School Publishing Company:

Royalties, June to December, 1930.....\$5,123.10

Royalties, January to June, 1931..... 7,165.37

————— \$12,288.47

From Fees for Quotations from Yearbooks..... 65.00

Interest on Bonds, etc.:

Interest on Registered Liberty Bond.....\$ 42.50

Interest on Other Liberty Bonds..... 42.50

Interest on U. S. Treasury Bond..... 42.50

Interest on Alabama Power Bond..... 50.00

Interest on American Tel. & Tel. Bond..... 75.00

Interest on Chicago Junction Railroad Bond.... 50.00

Interest on Detroit-Edison Bond..... 25.00

Interest on Interstate Power Bond..... 50.00

Interest on Penn-Ohio Bond..... 27.50

Interest on Utah Power & Light Bond..... 75.00

Interest on Royalties..... 262.55

Interest on Checking Account..... 1.48

Interest on Savings Account..... 135.06

Profit on Detroit-Edison Bond..... 110.00

————— 989.09

Security Received (cost value):

Public Service Colorado 910.00 910.00

Dues from Active and Associate Members..... 3,761.81

Miscellaneous Receipts 8.20

Total Receipts for the Year..... 18,022.57

Total Receipts, Including Initial Balance..... \$38,910.39

EXPENDITURES

Yearbooks

Manufacturing and Distribution:

Printing 6000 and Binding 4000 30th, I..... \$ 3,542.30

Mats for 30th, I..... 240.25

Printing 7500 and Binding 4000 30th, II..... 4,466.10

Mats for 30th, II..... 293.50

Binding 550 26th, 27th, and 30th, II..... 385.76

Binding 500 29th, paper..... 50.00

Plates for 25th, II..... 148.76

Reprinting 5000 24th, I..... 1,643.00

Reprinting 1024 25th, II..... 300.00

Reprinting 2000 26th, I..... 950.40

Reprinting 1033 26th, II..... 291.50

————— \$12,311.57

Preparation:

Liberal-Arts Yearbook	\$ 17.94	
Geography Committee	672.49	
Activities Committee	20.16	
Science Committee	441.69	
Textbook Committee	200.00	
Textbook Advisory Committee	165.40	
		<hr/> 1,517.68
Total Cost of Yearbooks		\$13,829.25

Meetings

A.A.A.S. Council Meeting	\$ 147.26	
Washington Society Meeting	113.52	
Chicago Board Meeting	288.74	
Detroit Board Meeting	357.33	
		<hr/> 906.85

Secretary's Office

Salary	\$ 2,500.00	
Rent	300.00	
Clerical	267.14	
Stationery and Printing	167.36	
Postage and Express	136.63	
Telephone and Telegraph	8.68	
Supplies	23.36	
Bonding	12.50	
Safety Deposit Box	5.00	
Refunded dues	3.00	
Bad Checks	16.50	
		<hr/> 3,440.17

Investments

\$1000 Public Service Colorado 6's 1961	\$ 910.00	
Interest Purchased on Bond	6.67	
		<hr/> 916.67
Total Expenditures for the Year		\$19,092.94
Balance on Hand, February 29, 1932		19,817.45
		<hr/>
Total Expenditures and Closing Balance		\$38,910.39

ANALYSIS OF BALANCE ON HAND FEBRUARY 29, 1932

Balance on Hand, February 29, 1932:

Cash:

Checking Account, Danvers National Bank	\$ 5,192.15
Savings Account, Danvers National Bank	2,531.69
Savings Account, Danvers Savings Bank	2,165.37
	<hr/> \$ 9,889.21

Securities at Cost Value:

\$1000 Alabama Power Company 5's 1951.....	\$ 1,027.50	
1000 American Tel. & Tel. 5's 1965.....	1,007.36	
1000 Chicago Junction Railroad 5's 1940.....	1,022.00	
1000 Interstate Power 1st 5's 1957.....	990.00	
1000 Penn-Ohio Power and Light 5½'s 1954.....	1,040.00	
1000 Public Service Colorado 6's 1961.....	910.00	
1000 U. S. Treasury Reg. 4¼'s 1938.....	1,000.00	
2000 U. S. Liberty and Treasury Bonds 4¼'s.....	1,926.88	
1000 Utah Power and Light 5's 1944.....	1,004.50	
		<hr/>
		9,928.24

Balance, February 29, 1932..... \$19,817.45

GUY M. WHIPPLE, *Treasurer.*

HONORARY AND ACTIVE MEMBERS OF THE NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

(This list includes all active members enrolled on December 31, 1932,
either for 1932 or in advance for 1933.)

HONORARY MEMBERS

DeGarmo, Professor Charles, Coconut Grove, Florida.
Dewey, Professor John, Columbia University, New York City.
Hanus, Professor Paul H., Harvard University, Cambridge, Mass.

ACTIVE MEMBERS

Abernethy, Professor Ethel M., University of Chicago, Chicago, Ill.
Abrams, A. W., State Education Dept., Albany, N. Y.
Adams, Jesse E., College of Education, University of Kentucky, Lexington, Ky.
Ade, Lester K., Prin., New Haven State Normal School, New Haven, Conn.
Adell, James, 3315 Avalon Road, Cleveland, Ohio.
Aherne, Mrs. Vina M., 146 Grafton St., New Haven, Conn.
Aitchison, Alison E., Iowa State Teachers College, Cedar Falls, Iowa.
Aitken, C. C., State School, Walkaway, Western Australia.
Alarcon, Arcadio, Acting Academic Supervisor, Tuguegarao, Cagayan, P. I.
Albright, Denton M., Superintendent of Schools, Rochester, Pa.
Alderfer, C. J., Superintendent of Schools, DuBois, Pa.
Alexander, Professor Carter, Teachers College, Columbia Univ., New York City
Alger, John L., Pres., Rhode Island College of Education, Providence, R. I.
Alleman, S. A., Superintendent of Schools, Napoleonville, La.
Allen, C. F., School Administration Bldg., Little Rock, Ark.
Allen, Professor Fiske, State Normal School, Charleston, Ill.
Allen, I. M., Superintendent of Schools, Highland Park, Mich.
Alter, Harvey E., Thomas Street School, Rome, N. Y.
Anderson, Harold A., School of Education, University of Chicago, Chicago, Ill.
Anderson, Harold H., State University of Iowa, Iowa City, Iowa.
Anderson, Mrs. Helen B., 414 W. Fayette St., Pittsfield, Ill.
Anderson, Homer W., Deputy Superintendent, Administration Bldg., Denver, Colo.
Anderson, John A., Indio, California.
Andrews, Professor B. R., Teachers College, Columbia University, New York City.
Andrews, William H., State Agricultural College, Manhattan, Kansas.
Andrus, Dr. Ruth, State Department of Education, Albany, N. Y.
Angell, Miss L. Gertrude, Buffalo Seminary, Bidwell Parkway, Buffalo, N. Y.
Antholz, H. J., Supervising Principal, Spooner City Schools, Spooner, Wis.
Archer, C. P., State Teachers College, Moorhead, Minn.
Arnold, E. J., Superintendent of Schools, Bremen, Ohio.
Ashbaugh, Professor E. J., Miami University, Oxford, Ohio.
Atkins, Dr. Ruth E., 723 Third St., St. Cloud, Minn.
Augustin, Miss Eloise D., "The Maples," Otsego Co., Laurens, N. Y.
Avery, F. B., 197 East Post Rd., White Plains, N. Y.
Avery, Geo. T., State Agricultural College, Fort Collins, Colo.
Ayer, Dr. Adelaide M., Dir. Training, State Teachers College, Milwaukee, Wis.
Ayer, Professor Fred C., University of Texas, Austin, Texas.
Ayer, Miss Jean Y., The Macmillan Co., 60 Fifth Ave., New York City.
Baack, L. H., Box 561, Lansing, Ill.
Bachrodt, Walter L., Superintendent of Schools, San Jose, Cal.
Badanes, Saul, Public School 173, Pennsylvania Ave., Brooklyn, N. Y.

- Bader, Miss Edith M., Supervisor of Public Schools, Ann Arbor, Mich.
Bagley, Professor William C., Teachers College, Columbia Univ., New York City.
Bailey, Francis L., 99½ College St., Montpelier, Vermont.
Baker, C. A., Dean of Normal School, Rio Baptist College, Rio de Janeiro, Brazil.
Baker, Dr. Harry J., 453 Stimson Ave., Detroit, Mich.
Baker, Professor R. A., College of the City of New York, New York City.
Ballou, Frank W., Superintendent of Schools, Washington, D. C.
Balyeat, F. A., School of Education, University of Oklahoma, Norman, Okla.
Bamberger, Miss Florence E., The Johns Hopkins University, Baltimore, Md.
Bane, Miss Anna W., Roosevelt School, Summit, N. J.
Barber, Fred H., Box 247, Emory, Virginia.
Bardy, Joseph, 5321 Wayne Ave., Apt. 209, Philadelphia, Pa.
Barfoot, Harry N., Frankford High School, Philadelphia, Pa.
Barnes, Harold, Supervisor Elem. Educ., Girard College, Philadelphia, Pa.
Barnes, Percival Simpson, Superintendent of Schools, East Hartford, Conn.
Barrett, Rev. John I., S. E. Cor. Franklin & Cathedral Sts., Baltimore, Md.
Barrett, Miss Leila May, 321 West Edison St., Tulsa, Okla.
Barton, W. A., Jr., Coker College, Hartsville, S. C.
Bateman, Miss Eva I., 1048 Glenwood Blvd., Schenectady, N. Y.
Bawden, Herrick T., Teachers College, Temple University, Philadelphia, Pa.
Bayles, E. E., 328 Seventeenth Ave., Columbus, Ohio.
Bayne, Thomas L. Jr., Cornell University, Ithaca, N. Y.
Beall, Ross H., W. 415 East Hall, Iowa City, Iowa.
Beattie, Alfred W., Supervising Prin., Ben Avon, P. S., Pittsburgh, Pa.
Beatty, Willard W., 30 Garden Ave., Bronxville, N. Y.
Beck, G. Herman, Prin., 3009a Victor St., St. Louis, Mo.
Becker, Miss Elizabeth, Lockhart School, Pittsburgh, Pa.
Bedell, Ralph C., 1310 Ross St., Columbia, Mo.
Bednar, Miss Christine, 132 West Marquette Road, Chicago, Ill.
Beeby, Daniel J., 7355 Jeffery Ave., Chicago, Ill.
Beechel, Miss Edith, 44 Elmwood Place, Athens, Ohio.
Behrens, Professor Minnie S., 1214 Sixteenth St., Huntsville, Texas.
Beilby, K. E., District Superintendent of Schools, Broome Co., Union, N. Y.
Beito, E. A., Wichita University, Wichita, Kansas.
Bell, Dr. J. Carleton, 1032A Sterling Place, Brooklyn, N. Y.
Belles, Edwin M., 16 West Eighteenth St., Spokane, Wash.
Bemiller, J. F., Superintendent of Schools, Galion, Ohio.
Bender, John F., School of Education, University of Oklahoma, Norman, Okla.
Benedict, Ezra W., Fair Haven, Vermont.
Bengtson, Professor Nels A., University of Nebraska, Lincoln, Neb.
Benson, Dr. C. E., New York University, Washington Sq., New York City.
Benson, J. R., 6131 Magnolia Ave., St. Louis, Mo.
Benton, G. W., 88 Lexington Ave., New York City.
Benz, H. E., College of Educ., Ohio University, Athens, Ohio.
Berman, Dr. Samuel, 5336 N. Sydenham St., Philadelphia, Pa.
Berry, Professor Charles S., Ohio State University, Columbus, Ohio.
Berry, Miss Frances M., Department of Education, Baltimore, Md.
Berry, William J., Western State Teachers College, Kalamazoo, Mich.
Betts, Dr. Emmett A., 3561 Ingleside Rd., Shaker Heights, Cleveland, Ohio.
Betts, Mrs. Mary Tuite, 32 Verona Bldg., Walnut Hills, Cincinnati, Ohio.
Bick, Miss Anna, 2842A Victor St., St. Louis, Mo.
Bickford, C. W., Superintendent of Schools, Lewiston, Me.
Biddle, Dr. Anna E., South Philadelphia H. S. for Girls, Philadelphia, Pa.
Billig, Dr. Florence G., 4746 Second Blvd., Detroit, Mich.
Bird, Professor Charles, University of Minnesota, Minneapolis, Minn.
Bishop, Fred G., Superintendent of Schools, Two Rivers, Wis.
Bixler, H. H., Board of Education, Atlanta, Ga.

- Blackburn, J. Albert, Rutgers University, New Brunswick, N. J.
Blumberg, A. Alvin, 1318 South 57th St., Philadelphia, Pa.
Bly, Professor John, St. Olaf College, Northfield, Minn.
Bogan, L. E., Superintendent of Schools, Okay, Okla.
Bohan, John E., West Virginia University, Morgantown, W. Va.
Bolton, Professor Frederick E., University of Washington, Seattle, Wash.
Book, Professor W. F., Indiana University, Bloomington, Ind.
Boraas, Julius, St. Olaf College, Northfield, Minn.
Bossing, Professor Nelson L., University of Oregon, Eugene, Ore.
Bott, Professor E. A., University of Toronto, Toronto 5, Canada.
Boucher, C. S., Dean, Coll. of Arts, Literature and Science, Univ. of Chicago, Chicago, Ill.
Bowen, Wayne F., Box 84, Compton, Calif.
Bowerson, Fred C., County Superintendent of Schools, Clinton, Iowa.
Bowyer, Vernon, Skinner School, 1070 W. Jackson Blvd., Chicago, Ill.
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Boyles, R. E., Washington High School, Washington, Pa.
Bracken, J., 7815 Maryland Ave., Clayton, Mo.
Bradner, J. W., Superintendent of Schools, Middlesboro, Ky.
Bragdon, Helen D., Dean, Women's College, Univ. of Rochester, Rochester, N. Y.
Brannon, Melvin, Chancellor, University of Montana, Helena, Mont.
Branom, Frederick K., Chicago Normal College, 68th St. and Steward Ave., Chicago, Illinois.
Branom, Professor M. E., Harris Teachers College, St. Louis, Missouri.
Breckinridge, Miss Elizabeth, Prin., Louisville Normal School, Louisville, Ky.
Breed, Professor Frederick S., 1224 E. 57th St., Chicago, Ill.
Brewer, Professor John M., Harvard University, Cambridge, Mass.
Bridgett, Miss Alice E., Colony Street School, R.F.D. 1, Wallingford, Conn.
Briggs, Dr. Howard L., Dir. of Vocational Educ., Bd. of Educ., Cleveland, Ohio.
Briggs, Dr. Thomas H., Teachers College, Columbia Univ., New York City.
Brim, Professor Orville G., Ohio State University, Columbus, Ohio.
Brinkley, Sterling G., Emory University, Ga.
Bristow, W. H., Deputy Supt., Dept. of Public Instruction, Harrisburg, Pa.
Brooks, Professor Fowler D., DePauw University, Greencastle, Indiana.
Brooks, Professor John D., Wilson College, Chambersburg, Pa.
Brown, F. J., School of Education, New York University, New York City.
Brown, H. A., Pres., Illinois State Normal University, Normal, Ill.
Brown, J. C., Superintendent of Schools, Pelham, N. Y.
Brown, Miss M. Ethel, Supervisor Elementary Grades, Schenectady, N. Y.
Brown, Professor Robert M., Rhode Island College of Education, Providence, R. I.
Brown, Miss Stella E., 4213 Belmar Ave., Baltimore, Md.
Brown, W. O., 406 Beveridge St., Carbondale, Ill.
Browne, Mrs. Hetty S., 825 E. Magnolia Ave., San Antonio, Texas.
Brownell, S. M., Superintendent of Schools, Grosse Point, Mich.
Brownell, Professor W. A., Duke University, Durham, N. C.
Bruce, Miss Clara H., Ahmednagar, Bombay Presidency, India.
Brueckner, Professor Leo J., University of Minnesota, Minneapolis, Minn.
Bryant, Miss Alice G., Hampton Institute, Hampton, Virginia.
Buchanan, William D., 5511 Vernon Ave., St. Louis, Mo.
Buckingham, Dr. B. R., Ginn & Co., Boston, Mass.
Buckner, Professor Chester A., University of Pittsburgh, Pittsburgh, Pa.
Buls, Edwin J., 496 Price St., Calumet City, Ill.
Burkhard, William E., 1631 W. Ruscomb, Philadelphia, Pa.
Burnham, Archer L., Superintendent of Schools, Scotts Bluff, Neb.
Burnham, Professor Ernest, Western State Teachers College, Kalamazoo, Mich.
Burnham, Paul S., Dept. of Personnel Study, Yale Univ., New Haven, Conn.
Burns, Robert L., Prin., Cliffside Park High School, Grantwood, N. J.

- Buros, Francis C., Broad Park Lodge, White Plains, N. Y.
 Buros, Professor Oscar K., Rutgers University, New Brunswick, N. J.
 Burr, Samuel Engle, Superintendent of Schools, Glendale, Ohio.
 Burton, Thomas C., Staten Island Academy, New Brighton, N. Y.
 Bushnell, Almon W., Superintendent of Schools, Henniker, N. H.
 Buswell, Professor G. T., School of Educ., Univ. of Chicago, Chicago, Ill.
 Butler, John H. Manning, Bur. of Educ., Division of Cagayan, Tuguegarao, P. I.
 Butler, Leslie A., Superintendent of Schools, Grand Rapids, Mich.
 Butsch, R. L. C., Marquette University, Milwaukee, Wis.
 Butterfield, Ernest W., State Board of Education, Hartford, Conn.
 Butterworth, Professor Julian E., Cornell University, Ithaca, N. Y.
 Byrn, Francis C., 35 Argonne Drive, Kenmore, N. Y.
 Byrne, Lee, 319 Twelfth Ave., S. E., Aberdeen, S. D.

 Calloway, Katharine L., Calumet Senior High School, Chicago, Ill.
 Calvin, Mrs. Henrietta W., Board of Education, Philadelphia, Pa.
 Cameron, Norman W., Prin., State Teachers College, West Chester, Pa.
 Cameron, Walter C., Prin., Lincoln Junior H. S., Framingham, Mass.
 Camp, Dr. H. L., 743 Wayne Ave., Indiana, Pa.
 Canine, Edwin N., Dir. of Student Teaching, State Normal, Terre Haute, Ind.
 Canty, Miss Margaret, 10th and Prairie Sts., Milwaukee, Wis.
 Carlson, Professor F. A., Ohio State University, Columbus, Ohio.
 Carmichael, Professor A. M., Ball State Teachers College, Muncie, Ind.
 Carney, Professor Mabel, Teachers College, Columbia University, New York City.
 Carpenter, Professor W. W., University of Missouri, Columbia, Mo.
 Carr, W. G., Director Research Division, N.E.A., Washington, D. C.
 Carrington, Dr. Evelyn M., Sam Houston State Teachers Coll., Huntsville, Texas.
 Carrothers, George E., University of Michigan, Ann Arbor, Mich.
 Carson, Dr. C. C., 951 Washington St., Miami Beach, Fla.
 Carter, Miss Harriet, Frick Teachers College, Pittsburgh, Pa.
 Carter, Professor Ralph E., Extension Div., Indiana Univ., Indianapolis, Ind.
 Cassel, Lloyd S., Superintendent of Schools, Freehold, N. J.
 Cattell, Dr. J. McKeen, Garrison, N. Y.
 Cavan, Professor Jordan, Rockford College, Rockford, Ill.
 Cerf, Professor Barry, Reed College, Portland, Oregon.
 Chace, S. Howard, Superintendent of Schools, Beverly, Mass.
 Chadwick, Raymond D., Dean, Duluth Junior College, Duluth, Minn.
 Chambers, M. M., Ohio State University, Columbus, Ohio.
 Chambers, Will G., Dean of Education, State College, Pa.
 Champlin, Carroll D., Pennsylvania State College, State College, Pa.
 Chandler, Paul G., Millersville State Normal School, Millersville, Pa.
 Chandler, Turner C., 7814 Cornell Ave., Chicago, Ill.
 Chandor, Miss Valentine L., 137 E. 62nd St., New York City.
 Chapman, Ira T., Superintendent of Schools, So. Broad St., Elizabeth, N. J.
 Charters, Professor W. W., Ohio State University, Columbus, Ohio.
 Chase, Lenox E., 64 Elm Ave., Mount Vernon, N. Y.
 Chase, Miss Marie S., 2038 Master St., Philadelphia, Pa.
 Chase, W. Linwood, 31 Colburn Rd., Wellesley Hills, Mass.
 Chew, Samuel L., Supt. Dist. No. 5, Carlisle and Race Sts., Philadelphia, Pa.
 Chidester, Albert J., Berea College, Berea, Ky.
 Chilcote, G. H., D. C. Heath and Co., San Francisco, Cal.
 Chiles, E. E., Prin., Harrison School, 4163 Green Lea Place, St. Louis, Mo.
 Chittick, Murray A., Supr. Prin., East Brunswick Township, Old Bridge, N. J.
 Clarahan, Professor Elizabeth, Constantinople Woman's College, Constantinople, Turkey.
 Cleaveland, Miss Margaret, 3817 East 116th St., Cleveland, Ohio.
 Cline, E. D., Superintendent of Schools, Dubuque, Iowa.

- Cochran, Professor T. E., Centre College, Danville, Ky.
Cochran, Warren B., Teachers College, Columbia Univ., New York City.
Coffey, Wilford L., Dean., College of the City of Detroit, Detroit, Mich.
Coffman, Lotus D., Pres., University of Minnesota, Minneapolis, Minn.
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1. *Purpose.* The purpose of the National Society is to promote the investigation and discussion of educational questions. To this end it holds an annual meeting and publishes a series of yearbooks.

2. *Eligibility to Membership.* Any person who is interested in receiving its publications may become a member by sending to the Secretary-Treasurer information concerning name, address, and class of membership desired (see Item 4) and a check for \$3.50 or \$3.00 (see Item 5)

Membership may not be had by libraries or by institutions.

3. *Period of Membership.* Applicants for membership may not date their entrance back of the current calendar year, and all memberships terminate automatically on December 31st, unless the dues for the ensuing year are paid as indicated in Item 6.

4. *Classes of Members.* Application may be made for either active or associate membership. Active members pay dues of \$2.50 annually, receive a cloth-bound copy of each publication, are entitled to vote, to participate in discussion and (under certain conditions) to hold office. Associate members pay dues of \$2.00 annually, receive a paper-bound copy of each publication, may attend the meetings of the Society, but may not vote, hold office, contribute to the yearbooks, or participate in discussion. The names of active members only are printed in the yearbooks. There were in 1932 about 1100 active and 1000 associate members.

5. *Entrance Fee.* New active and new associate members are required the first year to pay, in addition to the dues, an entrance fee of one dollar.

6. *Payment of Dues.* Statements of dues are rendered in October or November for the following calendar year. By vote of the Society at the 1919 meeting, "any member so notified whose dues remain unpaid on January 1st, thereby loses his membership and can be reinstated only by paying the entrance fee of one dollar required of new members."

School warrants and vouchers from institutions must be accompanied by definite information concerning the name and address and class of membership of the person for whom membership fee is being paid.

Cancelled checks serve as receipts. Members desiring an additional receipt must enclose a stamped and addressed envelop therefor.

7. *Distribution of Yearbooks to Members.* The yearbooks, ready prior to each February meeting, will be mailed from the office of the publishers, only to members whose dues for that year have been paid. Members who desire yearbooks prior to the current year must purchase them directly from the publishers (see Item 8).

8. *Commercial Sales.* The distribution of all yearbooks prior to the current year, and also of those of the current year not regularly mailed to members in exchange for their dues, is in the hands of the publishers, not of the secretary. For such commercial sales, communicate directly with the Public School Publishing Company, Bloomington, Illinois, which will gladly send a price list covering all the publications of this Society and of its predecessor, the National Herbart Society. (See also pp. 613-615 of this Yearbook.)

9. *Yearbooks.* The yearbooks are issued about one month before the February meeting. They comprise from 700 to 800 pages annually. Unusual effort has been made to make them, on the one hand, of immediate practical value, and on the other hand, representative of sound scholarship and scientific investigation. Many of them are the fruit of coöperative work by committees of the Society.

10. *Meetings.* The annual meetings, at which the yearbooks are discussed, are held in February at the same time and place as the meeting of the Department of Superintendence of the National Education Association.

Applications for membership will be handled promptly at any time on receipt of name and address, together with check for the appropriate amount (\$3.50 for new active membership, \$3.00 for new associate membership). Generally speaking, applications entitle the new member to the yearbook slated for discussion during the calendar year the application is made, but those received in December are regarded as pertaining to the next calendar year.

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